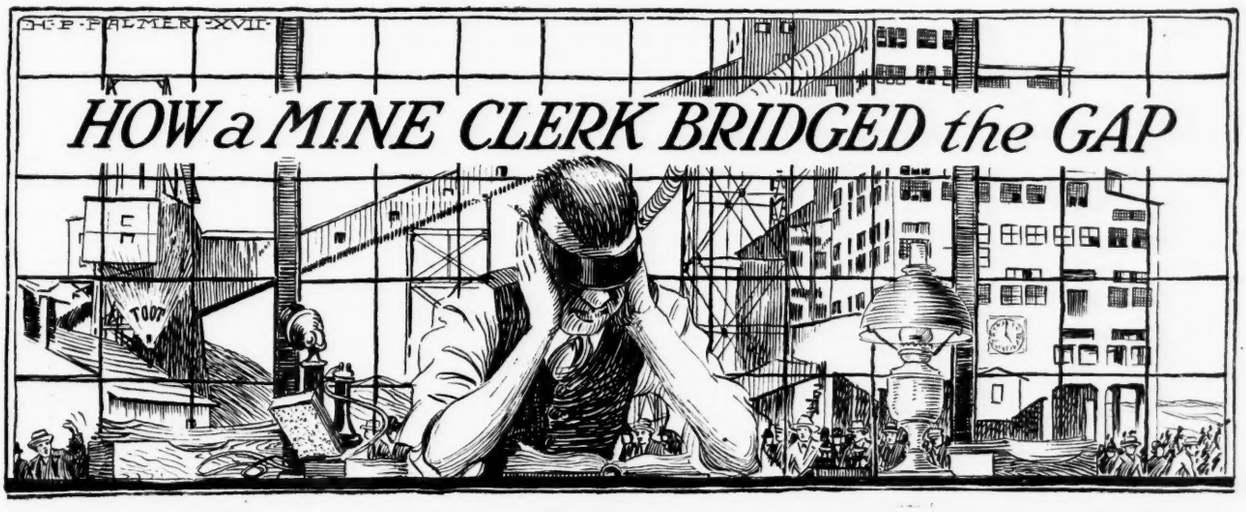
COAL AGE

Vol. 12 NEW YORK, SEPTEMBER 22, 1917 No. 12



FEW MINE CLERKS ever become mine managers. Why? "Oh," you answer, "the mine clerk is small fry. He's the fellow who keeps the time, issues mine supplies, ships the coal, makes up cost sheets and so on."

The mine clerk himself believes that he is about as close to a real job as two is to ten. Engineers, superintendents and all the rest feel sorry for the clerical boys, knowing that as a class they are out of line for material advancement.

Yes, there is a yawning gulf between the clerks and the men in the operating end. The pity of it is that too many clerks think it can't be spanned. But it can, and the story of how one fellow bridged it may give inspiration to others.

He was an exceptional man, I'll admit that. Somehow and somewhere he had learned to think as well as to work. Also, he was full of purpose and realized that the more he knew, and the more he could do, the more folks would want him around.

This man never felt that a mine clerk was ineligible for a real job. When they first hired him as an office boy, he let it leak out that some day he was going to be president of the company.

At night he picked up shorthand and typewriting, and the day the boss wanted to write some important letters when the regular man was on vacation, he volunteered for the job—and did it.

They put him in the time office. The superintendent often prowled around the plant at night. Once he dropped in and asked the boy why he had to work nights. "Don't have to," he replied, "but I've been wondering why a few men on the rock gang always draw their money after the regular pay-day—and I'm about to find why."

"What do you mean?" said the boss.

"I mean," he said, "it's because there ain't any such men; they're the straw kind."

Later he proved it, and the boss made him timekeeper. However, regular work and plenty of it was not enough for him, he was always making up comparative statements of labor cost and comparing various units as to number of men, money, etc. He got the reasons for increase or decrease in cost direct from the pit bosses, and at his suggestion the same kind of data was made up in the storehouse.

Later the superintendent moved him into his office on special work. Here his qualities found full vent. He went underground oftener than the boss. The charts he made up covering cost, quantity of supplies purchased and used, etc., made it easy for the boss to stay out.

He went back to night work, studied for mine foreman and passed first-class. He became proficient in engineering and chemistry. The boss introduced him to the general manager, and a little later the "G. M." made him Special Investigator for all the company's mines. His boyhood boast of being president of the concern may come true.

How did he bridge the gap?

First—By learning early in life that it isn't wise to leave your fate in the hands of others. Neither precedence nor practice could shelve him.

Second—By thinking, studying and planning ahead.

Third—By doing a great deal more than he was hired to do.

Fourth—By working along original lines where others had failed to see an opportunity.

MORAL.—No job is so confined but an earnest effort will discover some exit to a land of promise.

Ideas and Suggestions

Effective Indicating Derailer

By Frank Hoskinson
Delagua, Ohio

A reliable derailing device is necessary in a good many places inside the mines. Especially is this true on a slope that has several entries turning off of it. A derailer should be placed above each entry, and this device should be so arranged as to enable the trip-rider or any other person to throw it without danger in case of a runaway trip or car moving down the slope. A

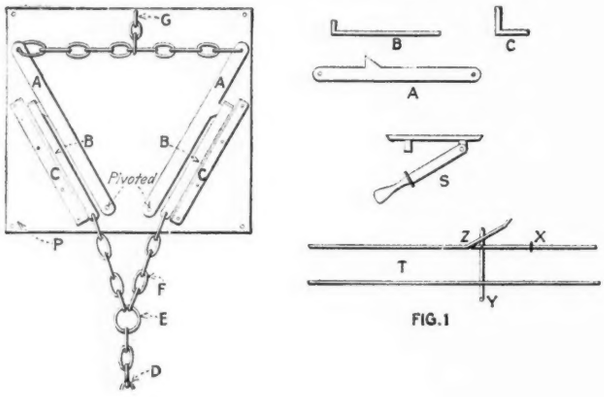


FIG. 1

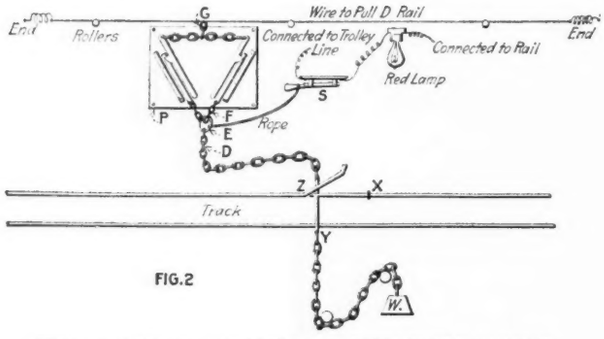


FIG. 2

FIGS. 1 AND 2. DETAILS OF DERAILING DEVICE

derailer that has to be thrown by a hand lever located close to it is not of much use inside a coal mine.

At Delagua, Colo., the slope of the No. 3 mine has three entries turned off of it. The coal is hauled to the slope partings in trips of 20 cars each by electric locomotives. Such a trip is then hauled to the tipple by an electric hoist located outside. The distance from the slope mouth to the last entry is approximately 4000 ft. Above each of the entries is a derailing switch, and these are arranged so that they can all be opened at the same time from any point on the slope. An electric lamp at each derailer indicates whether the switch is open or closed.

In Fig. 2 is shown a general assembly of the device. A heavy iron wire is run from the mouth of the slope to the last entry. This wire is dead-ended on an adjustable turnbuckle and closed coil spring at each end, and is supported along the entry by small grooved wheels fastened to the timbers. At each derailer this wire is fastened to the part *G* so that no matter at what part of the slope the wire is given a good pull it will actuate *A* on one side or the other. As soon as *A* is pulled it releases *B*, allowing the weight *W* to open the latch. When the chain *E* drops, it pulls out the switch *S*. This opens the electric-light circuit, so that the two red lights just over the derailer will not burn until the device is reset. When the trip-rider starts down the slope he can see the red lights burning at each derailer and thus know that these switches are closed. On the other hand, if the red lights are not burning, he knows that the derailer is open and he can at once signal the hoistman to stop.

Fig. 1 shows details of some of the parts shown in Fig. 2. *P* is a steel plate on which the trip mechanism is mounted. *A* and *A* are two catches each pivoted at one end, the other ends being fastened together by a chain. To this chain, at *G*, the wire for throwing the device is fastened. *B* and *B* are two pieces held in position by *A*. One end of each is turned up, the other ends being fastened together by the chain *F*. This chain passes through the ring *E*. The parts marked *C* are two pieces of angle iron riveted to the plate *P*. *D* is a chain fastened to the derail latch. *S* is a detail of the lamp switch. The handle of this switch is fastened by a small rope to the iron ring *E*. This rope is just tight enough so that the switch can be put in when the derail is closed, but cannot be closed when the device is open. A detail of the track at the derailer is shown at *J*. *Y* is a bar that is fastened to the latch. *X* is the point where this latch is hinged to the main rail. *Z* is the main rail bent out at an angle to form the opening when the latch is pulled.

The apparatus just described is one of the most effective and practical derailing devices I have ever seen around a coal mine. All the parts are made strong and simple so that no trouble is experienced with this derailer after it is once installed.

Siphoning Mine Water

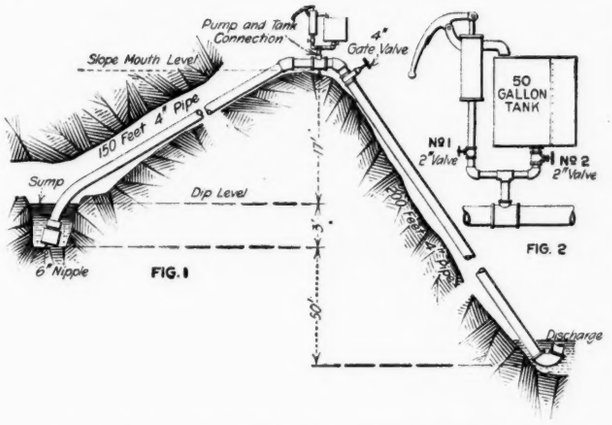
By Jack L. Ball
Amsterdam, Ohio

Except by natural drainage, the simplest method of taking water from a slope mine, mechanically, is by siphoning. At times this causes more or less trouble, but with a little care in installing a siphoning apparatus, together with a slight knowledge of hydraulics, one ought to experience but little trouble.

The first thing necessary is pipe of a diameter sufficient to carry off the water as fast as it collects; the next is to have the siphon air-tight; then see that the pipe is leveled properly; that is, that there are no depressions in the line which will cause air pockets to

form, as this seriously interferes with the successful operation of the siphon. See that the discharge end of the siphon is well below the suction level, the more the better.

Theoretically, the height to which water can be raised, conditions being perfect, is 34 ft. At this distance there would be no flow because the pressure on the discharge



FIGS. 1 AND 2. ILLUSTRATE A SIPHON INSTALLATION

side would balance the pressure required to raise a column to this height, which is the atmospheric pressure taken at sea level—14.7 lb. To achieve good results one should not go over 25 feet.

Figs. 1 and 2 illustrate a siphon that was installed in a slope mine in western Pennsylvania, and to the writer's knowledge this was operated very successfully for several years. Referring to Fig. 1: From the slope mouth to the bottom of the dip the lineal distance was 150 ft., and from the sump bottom level to the slope mouth level the height was 20 ft. From the highest point of the siphon to the end of the discharge line the distance was 200 ft., and the vertical drop was 70 ft. Four-inch pipe was used throughout, except a 6-in. nipple 1 ft. long, which was put on the end of the suction to insure an unrestricted flow of water at that point. When necessary the pipe was bent, and ells were used only at the end of the discharge.

Fig. 2 shows a bucket, or common-well, pump and a 50-gal. iron tank connected to the siphon slightly beyond the highest point, with 2-in. pipe and fittings. To start the siphon, valve 1 was opened and the pump operated until water was pumped out, the surplus going into the tank, thus insuring a tank full of water at all times. The 4-in. gate valve shown in Fig. 1 was then opened and the valve in the pump line closed.

The tank was connected in the same manner as the pump, kept full of water, or nearly so, and when at any time the flow of water from the siphon became intermittent valve 2 was opened, letting enough water into the line until the flow became steady again. At the end of the discharge line, Fig. 1, an ell was placed together with a 4-in. nipple 1 ft. long. One of the characteristics of a siphon is that unless precautions are taken air will enter at the discharge end, work gradually back in the siphon to the suction end and break the flow. To prevent this the ell was placed in the position shown, with the nipple almost vertical. This acted as an air seal and eliminated almost entirely any air that might have entered at this point.

Humane Treatment for the Mule

By W. H. Clark
Bolivar, Penn.

It seems to me that the mule doesn't receive the proper sort of treatment when he is being broken in for work in the mines, and it has occurred to me that the following "Don'ts" may prove of help to those who are responsible for the care of these animals. A strict compliance with the few warnings set forth below will result in a greater degree of efficiency from "green" mules.

Don't take a mule into a mine for the first time and set him to work on a steep grade hauling cars that would require the best effort of a practiced animal to draw out.

Don't delegate the work of breaking in a new mule to an extra driver or some mine worker who has never had any experience in driving mules.

Don't let the mule be harnessed by one who doesn't know whether the harness fits or not, or whether the hames are adjusted so as to throw the draft in the right position on the shoulder.

Don't fix the trail chain so that the weight pulls down on the animal's rump, or adjust his coller so that it pinches the top of his neck.

Don't take a mule into a heading where the smoke is so thick you cannot see.

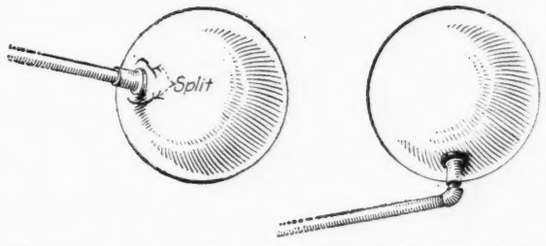
Don't walk alongside a mule while he is drawing a car and belabor him at every step he takes.

Don't put the halter chain around the animal's jaw and stand in front of him and pull on it, while a helper whips him with a belt or a club.

If a mule is balky, have the stable boss adjust his harness and let the mule haul something outside, such as drag rails, or let him haul empties for a few days. It is also a good plan to put a "green" mule in a strong team with an animal that understands the work and let the two mules do the work of one until such time as the new mule becomes accustomed to the work.

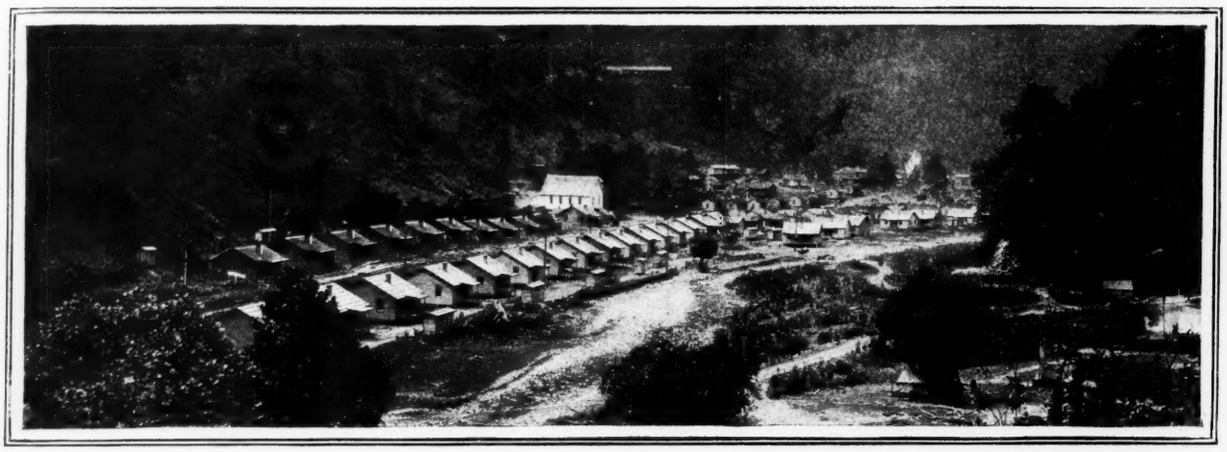
Improved Float Connection

In connection with a number of large tanks we used float-controlled water regulators, and the valves being of large size, the floats were called upon to exert quite a lot of force. We had considerable trouble with the floats giving way around the socket to which the arm



FLOAT CONNECTED TO AVOID DESTRUCTIVE STRAIN

was attached, the float and rod being placed in a horizontal line. We turned one to a vertical position so that the float pulled at right angles and the lifting stress was distributed around the entire circumference of the float. This was found to cure the trouble, and since changing all our floats, no trouble from splitting has been experienced.—*Power.*



Plant of the Lundale Coal Co., Lundale, W. Va.

By W. W. BEDDOW
Superintendent Lundale Coal Co., Lundale, W. Va.

LUNDALE is in Logan County, West Virginia, on the Guyan Valley branch of the Chesapeake & Ohio R.R., an even hundred miles from Huntington, W. Va. Lundale is practically a new town—the railroad to it was completed only a few years ago. The Lundale Coal Co., however, has already built several hundred houses, a theater, two churches, lodge halls and billiard halls, and is now erecting a restaurant with dormitories on the upper floors. Work on a modern bathhouse, which includes in its equipment a swimming pool, will soon be started. The illustration at the head of this article shows part of the east end of the town.

A new steel tipple is being built. The structural steelwork was fabricated by the Virginia Bridge and Iron Co.; the machinery was manufactured and erected by the Pittsburgh Coal Washer Co. When completed, the tipple will be one of the most modern in West Virginia. Fig. 3 shows the tipple while in the process of erection.

A 600-kw. substation has recently been completed. It is a stone fireproof building and contains four General Electric 150-kw. motor-generator sets. The switchboard is the latest type manufactured by the General Electric Co. The electrical equipment was designed and arranged by Randolph-Means, of Pittsburgh, Penn. At present the town of Lundale is watered by means of deep wells, there being one for every four houses. However, plans have been completed for a pressure water system and sewerage system to be installed throughout the town.

Buffalo Creek, a tributary of the Guayandotte River, flows through the town of Lundale in many curves. To limit the creek to a definite channel, a Bucyrus traction shovel has been installed and a straight canal is being cut for the creek against the north hillside.

FIG. 1. BUCYRUS SHOVEL DIGGING STRAIGHT CHANNEL; ROADWAY BEING BUILT OF BORROWED GRAVEL

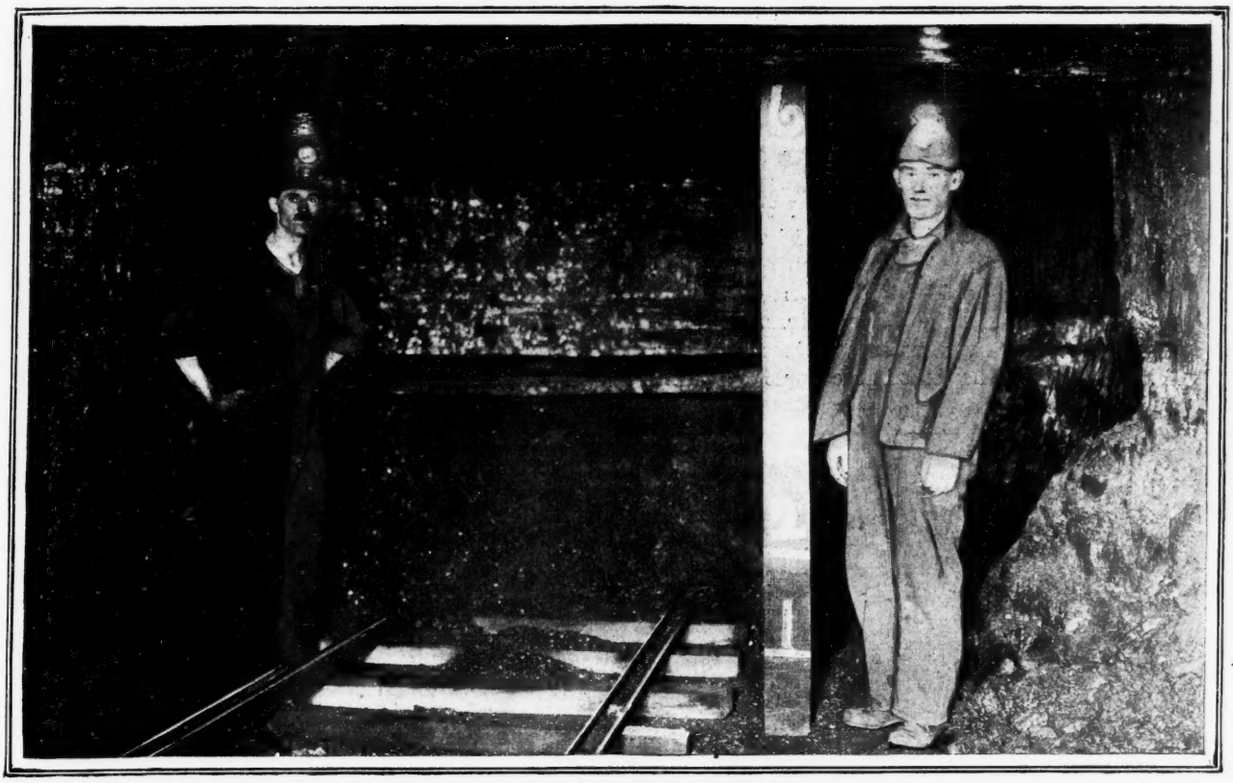


FIG. 2. VIEW AT THE FACE; SEAM RUNS FROM 6 TO 7 FT. IN THICKNESS

This is clearly shown in Fig. 1. The gravel borrowed from the canal bed is being so placed as to form a roadway, high and dry, 25 ft. wide.

The mine is a drift mine. The vein is about 200 ft. above the railroad and the coal is carried to the tipple by means of a conveyor. The seam, known as the No. 2 Gas, or Island Creek, runs from 6 to 7 ft. in thickness. There is only one parting in the coal—a fireclay parting 1½ in. thick—right in the middle of the vein. The top is firm and hard, and no timbers are

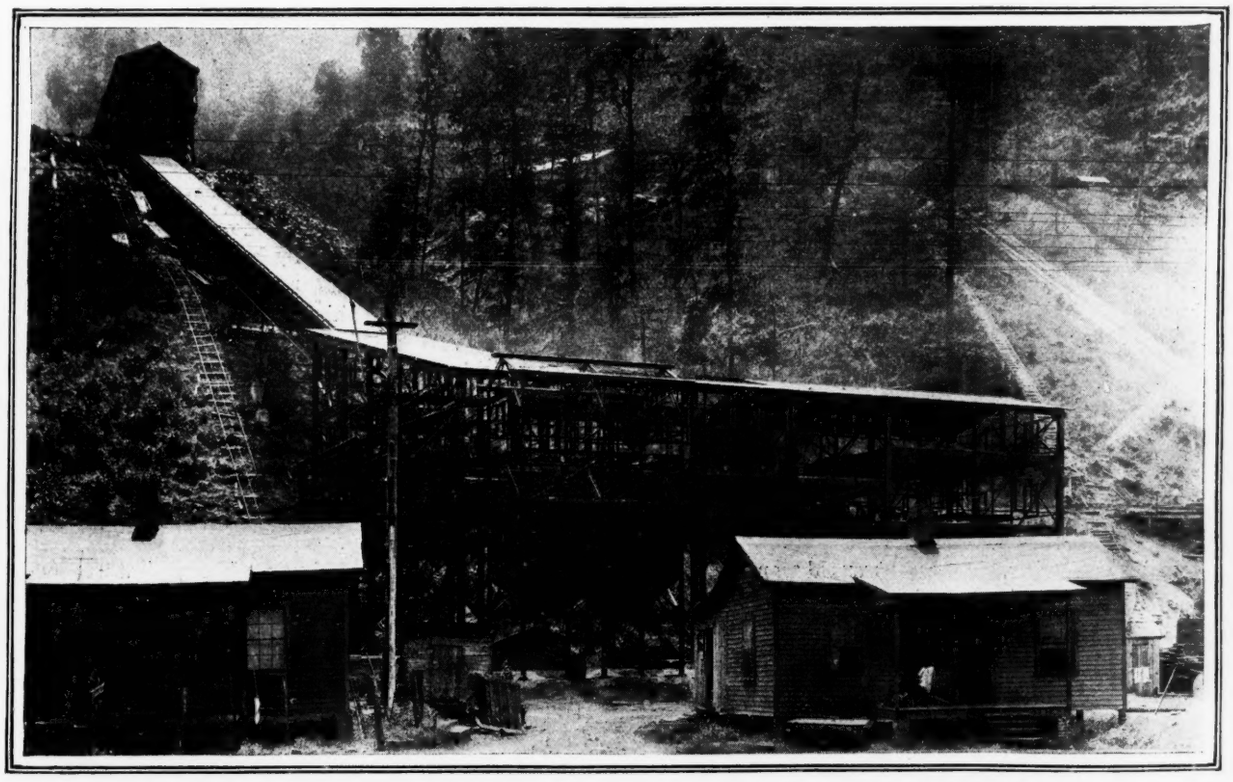


FIG. 3. THIS MODERN STEEL TIPPLE, WHEN COMPLETED, WILL BE ONE OF THE FINEST IN WEST VIRGINIA

ever placed in the entries and but few in the rooms. In the entries the coal is all cut in the middle, immediately under the fireclay parting. Jeffery arcwall machines and Jeffery 21A breast machines mounted on trucks are used.

The rooms are cut on the bottom by means of Goodman shortwall machines. There is no gas or dust in the mines and all the miners use carbide lamps. Sixty-pound steel is laid on the main entries. Fig. 4 shows a three-track parting along the main entry. Jeffery haulage equipment is used—6-ton elcctric-driven reel gathering locomotives and 8-ton trip motors.

This is one of the few bituminous mines that store coal. When an accident happens to the tipple equipment, or railroad cars are scarce, coal is dumped over a chute onto ground which has been cement coated. When a plentiful supply of cars comes to the field, the coal is loaded from the storage pile into the cars by means of "Brownhoist" bucket-equipped locomotive cranes.

The progressive spirit behind this operation is George M. Jones, the managing director. He also has on his shoulders the active management of six other subsidiary companies. At present Lundale is shipping 1400 to 1700 tons a day, but the mark set for next year is 60,000 tons a month.

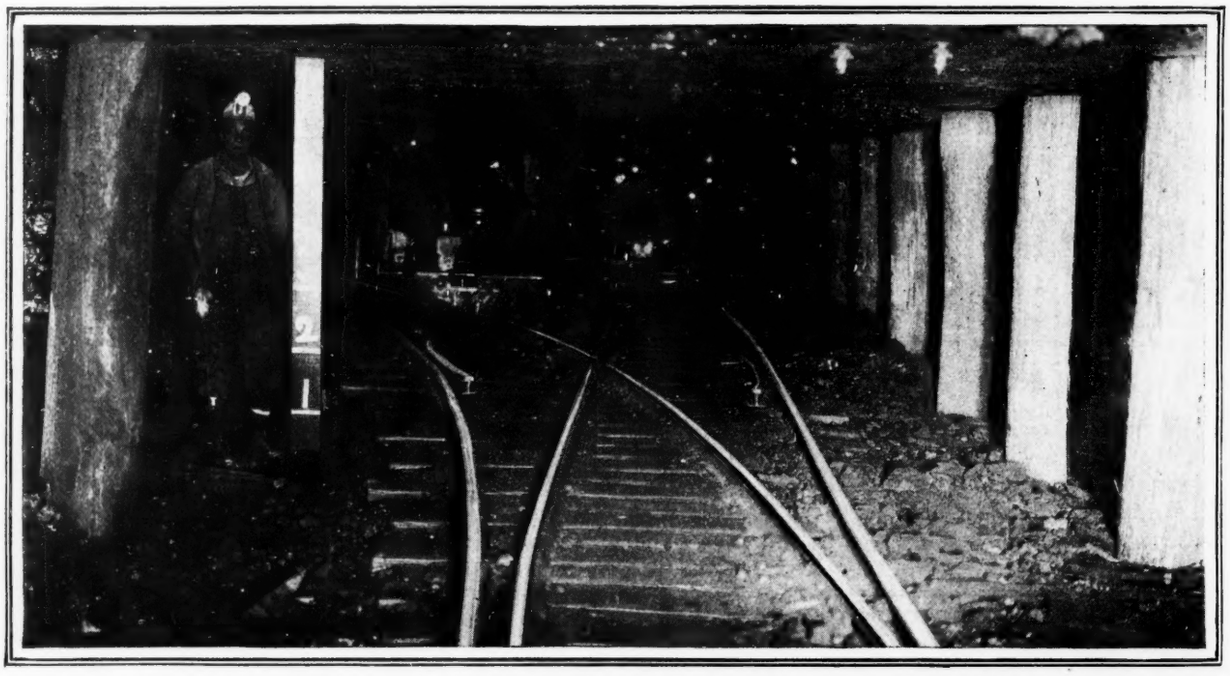


FIG. 4. PARTING ALONG THE MAIN ENTRY; NOTE THE HEAVY STEEL TRACKS

Reclaiming the Scrap Heap

Since its beginning, the present world war has drawn so heavily on the metal industries as to seriously interfere with the normal production of machinery and metal parts. Soaring metal prices and a shortage of skilled mechanics have made it difficult for American manufacturers to get new machinery or repair parts without considerable delay and expense.

Now that the United States has been compelled to unsheath the sword, a still greater demand for "war goods" is inevitable. Millions of tons of machined metal will be needed. National safety demands that all available skilled labor and necessary metals be placed on a "war footing" in order to insure the successful outcome of the world war.

It will be increasingly difficult for the average firm engaged in industrial pursuits to obtain new machinery and other metal equipment, and it becomes not only a necessity but a patriotic duty for everyone so engaged to utilize the equipment he has—to reclaim for service the broken and worn machinery and parts that have hurriedly been consigned to the scrap pile.

Today, while industrial concerns are clamoring for machinery and replacements, there are literally thousands of the very pieces wanted reposing in junk heaps. These have been considered unserviceable by reason of a break, crack or worn spot. They represent millions of dollars in what might easily be made valuable metal and workmanship.

That many pieces of this metal equipment that manufacturers have discarded as junk can be restored to service quickly and at a trifling cost by oxyacetylene welding is the subject of a nation-wide campaign being conducted by the Prest-O-Lite Co., Inc., of Indianapolis, Ind. The campaign, which is being run in general and technical magazines, points out the possibilities of autogenous welding in the conservation of time, metals and labor by reclaiming the scrap pile.

The practice of reclaiming broken and worn metal parts by autogenous welding, as well as applying the process to manufacturing metal products, is, of course, not new. The process has been in extensive use in thousands of mines, mills, foundries and factories for years. In these days of high-priced metals and uncertain deliveries, however, the process must hold some interest for every far-sighted industrial manager who has not heretofore looked into its possibilities.

Centrifugal Pumps for Mine Service

By HERBERT AXFORD
Pump Inspector, Coal Department, Delaware, Lackawanna & Western R.R., Scranton, Penn.

SYNOPSIS—*The experience of many years with a large variety of pumps forms the basis of this article. Although the theory of the centrifugal pump as usually set forth by writers on this subject is somewhat complicated, the machine itself is simple. Its successful installation and operation require only care and judgment.*

AT THE outset I wish to state that when I use the term "mine service," I refer particularly to anthracite mines, with which I am more familiar than with others. At these mines fuel is reasonably cheap, and principally because of gritty and acidulous water the operating conditions are unusually severe on the pumps.

Nevertheless, I believe that my statements will apply to practically all conditions where centrifugal pumps are used, since no hard and fast rules can be laid down to fit every case. Even at anthracite mines the nature of each installation must be determined only after a full consideration of all the facts and data available. If a pump or machine is built to operate under the worst possible conditions, there is every reason to believe that it will be a better pump or machine under the best working conditions than one built only to meet almost perfect operating conditions.

I WILL not attempt to go into the theory of the design of centrifugal pumps. After reading several books on this subject, I came to the conclusion that either the authors did not know what they were writing about, or I did not. Consequently, I agree with the elder Trautwine, who said that the author's "exhibit a profundity of knowledge beyond the reach of ordinary men—yet their language is so profound that very few engineers can read them," and the works are little more than striking instances of how completely the most simple facts may be buried out of sight under heaps of mathematical rubbish."

I believe that the only theory the majority of pump builders believe in is a good measure of common and mechanical sense added to results obtained after building and testing a few pumps. They then formulate their empirical rules to govern future designs.

If any one wishes to study the theory of centrifugal pumps, there are three or four books in the English language devoted to the subject upon which he can devote as much energy as he desires. There are a few rules, however, that it is well to remember; namely, for equal efficiencies the power required to drive the pump varies as the cube of the speed; the head as the square of the speed; and the capacity directly as the speed. The head in feet that any impeller will work against is approximately the diameter of the impeller in inches times the revolutions per minute divided by 1950 squared, or $H = \left(\frac{d \times r.p.m.}{1950}\right)^2$.

The centrifugal pump is a simple machine consisting primarily of a casing which conveys the water from the suction pipe to the impeller and from the impeller to the discharge pipe. This casing is usually mounted on a baseplate which also supports the driving element, whether it be motor, engine, steam turbine or belt wheel.

THE most distinctive part of the whole machine is the impeller, the function of which is to take the slowly moving water in the suction pipe and, by revolving at a stated speed, create by centrifugal force a velocity head in the water convertible into a pressure of sufficient intensity to overcome the static and friction heads of the discharge pipe. The impeller is mounted on a shaft carried by bearings. One end of the shaft is generally fitted with a coupling to which is connected the driving element. This, in a general way, is all there is to a centrifugal pump.

I will now describe the different parts of this type of pump in detail and add a few suggestions concerning their design which I have gathered from several years of experience in trying to keep over 100 of these machines in successful operation.

The pump casing is constructed of iron, bronze or alloyed metal, depending upon the liquid to be handled. For fresh water, cast iron can be used safely, but for water containing corrosive acids or metallic salts—even though the pollution is slight—bronze is better, especially if any electrolytic action arising from the use of dissimilar metals is liable to occur. The metal in the casing for acid mine water should be from $\frac{1}{4}$ to $\frac{3}{8}$ in. thicker than when pure water is pumped. This makes allowance for corrosion.

The casing should be so designed as to be readily opened, giving access to the entire inside of the pump. This is most readily accomplished by employing the so-called horizontally split casing that has the suction and discharge openings on the bottom half and is bolted to the cast-iron baseplate. Such an arrangement permits of the top half of the casing being removed without breaking any pipe joints or disturbing the alignment of the pump—considerations which are of great importance when repairs have to be made in a hurry.

I WILL admit that mechanically and structurally the horizontal split is not so good as the so-called "vertical split," in which the annular portion of the casing is in one piece. In the latter instance, however, the internal parts are withdrawn from the end, after removing the end plate which usually forms the suction pump-head. This procedure necessitates the breaking of the suction-pipe joint. Furthermore, in this case the parts must be pulled out one at a time—first the impeller, then the diffusion ring, next that part of the casing forming the return guide for the water to the second impeller, then the second impeller and so on—a long tedious job, especially in large units.

In putting the parts together, the reverse order must be followed and care must be taken to insure that all

the parts come to place properly, in order to prevent them from overlapping and partly closing the water passages in the casing. In such cases reliance must be placed entirely upon careful measurements; and it is very hard to make men to whom a foot more or less is good enough understand the importance of measuring to $\frac{1}{16}$ or $\frac{1}{32}$ in. or less. With the horizontal split, as before stated, after lifting the top half off the machine all internal parts are in view and can be removed readily. Furthermore, before the top half of the casing is replaced one can *see*—not feel—that everything is as it should be.

THE ends of the casing through which the shaft projects are provided with stuffing-boxes and glands. The stuffing-boxes should be deep enough to take not loss than four or five rings of good soft packing. The glands, preferably made in halves, should fit tight in the box but be a loose fit on the shaft. They should therefore be about $\frac{1}{16}$ in. larger than the shaft. To the back of the stuffing-box renewable rings should be fitted, so that if they become worn and allow the packing to be squeezed into the pump, they can be replaced. The stuffing-box on the suction side, particularly when the pump is working under a suction lift, should be provided with a water seal to prevent air being drawn into the pump and also to lubricate the packing in this box with water.

Removable rings should be provided around those parts of the casing in which the impeller or other moving parts revolve, so that in case of wear—which is bound to occur even under the best conditions and quite rapidly when pumping acidulous mine water—these rings can be replaced.

One of the chief causes of loss in the initial efficiency of centrifugal pumps is internal leakage, which, between a stationary and a revolving element, is only prevented by close running fits. There are several types of labyrinth rings designed, patented and used by different builders—the idea being that the water has to traverse a narrow, tortuous passage which it can follow only with difficulty. These rings may have merit when good, clear water is pumped, but for mine use a plain straight ring is preferable. This should have a width of from $\frac{3}{4}$ in. to 2 in., with a running clearance of from 0.006 to 0.01 in., depending upon the size of the impeller. These rings, except for the larger sizes when fresh water is used, should be of bronze.

In all modern pumps the impellers are of the inclosed type, with the blades or vanes curving backward, making an angle of from 12 to 24 deg. with the outer diameter. The impellers should be of bronze except when the water to be pumped is pure, in which case in pumps of the medium and larger sizes they can safely be made of cast iron.

Originally pump builders stated that the impeller blades should be as thin as possible, with the tops cut to a knife-edge. This was soon found to be a fallacy, especially in bad water, for the thin blades corroded quickly and the knife-edges doubled over and closed the port openings. The impeller walls and blade should be $\frac{5}{16}$ in. thick for 12-in. diameter impellers and $\frac{3}{8}$-in. thick for 24-in. diameter and larger impellers. With such impellers higher initial efficiency, far better average efficiency and much longer life is obtained than with thinner blades. Impellers should be provided with renewable wearing rings where they fit into the casing. These rings can be shrunk on. The impeller and all rotating elements should be balanced.

Diffusion vanes are used by some builders, who claim that they are essential in order to obtain high efficiency with multistage pumps. Other builders assert they can get just as high efficiency without these parts. Diffusion vanes, which are stationary plates with guide vanes curved in an opposite direction to the impeller blades, are arranged to encircle the impeller and receive the water discharged from the impeller tips at high velocity, and by reducing its speed convert velocity head into pressure head.

The usefulness of diffusion vanes is not always apparent, since by actual tests of two different makes of two-stage pumps, each with about the same operating conditions (one with and one without diffusion vanes), the efficiencies of each were practically the same. If diffusion rings for mine pumps are used, they should always be of bronze; and provision should be made to prevent their turning in the casing and to prevent leakage around the vanes.

The pump shaft should be of steel and be protected by cast-bronze sleeves or bushings placed over all parts of the shaft that come in contact with the water. The end bushings should project through the stuffing-boxes and form the nuts that keep the impeller in place laterally. Provision should also be made to prevent leakage along the axis of the pump shaft, which can be done by inserting fiber gaskets $\frac{1}{16}$ in. thick between the impeller hubs and the ends of the bushings.

Impellers should fit snugly on the pump shaft, but not necessarily be a driving fit, and they should be secured from turning by bronze (not steel) feather keys. The pump shaft, when hung in its bearings, should be large enough in diameter to support the weight of the impellers and the column of water without perceptible deflection, so that the internal sealing rings and bushings will not be required to support any weight. In many instances the undue wear of sealing rings has been directly due to the pump shaft deflecting under load.

BEARINGS should be of the ring-oiled type with renewable liners in halves. Bearing boxes should be provided with bolted caps, so that the bearing liners may be renewed or rebabbitted without removing the shaft; and so that when the top half of the casing is removed together with the bearing caps, the complete rotating element can be lifted from pump.

One of the most important details in a centrifugal pump is the thrust bearing, as the unbalanced end thrust causes great trouble to the operator and oftentimes taxes his resources to the limit to find the cause and remedy the defect. Theoretically, every pump leaving the factory is hydraulically balanced. The double suction impeller has inlets on each side which are of the same diameter. The impellers thus having the same pressure on each side are therefore perfectly balanced—on paper. But let one side get blocked with a piece of coal or one side take more water than the other, or the leakage through the sealing rings on one side be more than on the other, and an unbalanced effect is immediately established.

This unbalanced pressure has to be carried by the thrust bearing. There is also the single-suction impeller, wherein the water enters on one side only. This is balanced by putting a duplicate set of sealing rings back of the impeller. Holes drilled in the rear wall of the impeller connect with the inner chamber formed by the sealing rings and thus balance the pressure in this chamber with that of the suction. Many times I have had to plug up some of these holes or enlarge them in order to relieve the undue end thrust.

Then there is the back-to-back type of impeller—that is, where the suction on one (or one set) of impellers is on the left-hand, while the suction of the other (or other set) of impellers is on the right-hand side. This arrangement should form a perfect end balance, and yet the thrust bearing may get red hot after a few minutes' run.

ALL centrifugal mine pumps require thrust bearings in order to take care of the end thrusts that are liable to occur. The most satisfactory bearing for all ordinary purposes is the marine thrust type—that is, a series of steel collars running between babbitted collars, plentifully supplied with oil. Such a bearing should preferably be run in a bath of oil with the thrust box water-cooled to keep the lubricant at normal temperature. Furthermore, this thrust bearing cannot be made too large.

There are several patented thrust bearings on the market—notably the "Kingsbury," which appears to have great merit but is complicated in design and I think unnecessary for the pumps in general use. So much trouble has been experienced with ball thrust bearings, especially for pumps running at high speeds, that my company has discarded them wherever possible.

Several companies are building pumps in which hydraulic balance is effected by water leaking from the discharge side of the impeller into a balancing chamber and then out past a balancing disk which rotates with the pump shaft into the suction side of the pump. This device works automatically and gives satisfactory service where the water is clear and free from grit and acid, but it soon becomes useless when pumping acidulous or gritty water.

The couplings which connect the pump and motor shafts may be of cast iron, but not any heavier than necessary, and should be of the pin-and-buffer type to allow the driving machine a certain amount of end play without putting stress on the thrust bearing of the pump.

The baseplate should be of cast iron, heavy enough to resist distortion should the foundations settle a little, also if the pump be subjected to careless handling during erection.

In a measure I have covered in detail the general constructional features of the different parts which go to make a serviceable mine pump. Although some of the points mentioned may seem trivial and others self-evident, I have found that even at this late date the construction of all the different parts of a pump must be watched carefully. If the front or inner bearing of some pumps should burn out—an occurrence by no means uncommon—it would be necessary, in order to replace the bearing, to move the whole pump from its base, break the suction and discharge connections and remove the coupling from the shaft. If the men who designed such pumps were compelled to repair them in the mines while the water was rising over their shoetops at the rate of an inch a minute, there would soon be a radical reform in the construction of these pumps.

Another matter for investigation is the use of small screws, dowels or pins on the inside of the pump. Some builders—in fact the majority—can only think of a small screw or dowel to prevent a ring or bushing from turning. However, acidulous mine water eats these small parts out so quickly that they are useless, and when they give way they seem to have the habit of lodging between some stationary and rotating element, thereby cutting grooves and ridges on the impeller or casing and almost ruining the machine.

The speed at which it is most advantageous to drive centrifugal pumps is a much debated question. Just now builders of pumps and motors seem to be advocating high rotative speeds to secure efficiency, but for mine use I prefer moderate speed wherever possible as less trouble is then experienced with both pump and motor. About power houses and factories the higher-speed pumps apparently give good service. I find that for 75 or 100 hp. and upward 900 r.p.m. is satisfactory; for 30 to 50 or 75 hp. 1200 r.p.m., and for smaller pumps 1500 to 1800 r.p.m.

The head per stage is another open question; but, speaking generally, I have found that pumps working under 100 ft. per stage have a longer life than those working over 100 ft. per stage. Consequently, until further evidence is produced, my company will aim to keep 100 ft. per stage the maximum.

THE centrifugal pump is about the simplest pump to operate, provided a few arrangements are adopted to comply with their needs. For example, means must be provided for priming or filling the machine with water. Where the pump is placed below the source of water-supply it is always primed as soon as the valve in the suction pipe is opened and all entrained air allowed to escape from the top of the casing; but when the pump is placed above the water supply, some provision must be made for filling it.

For the latter purpose, the following methods have been successfully adopted. Where pumps are to work under heads of less than 400 ft., a foot valve is placed on the suction pipe near to, and preferably submerged in, the water (not necessarily at the deepest or lowest point of the suction pipe, where it would be hard to reach in case of any trouble) and the water admitted into the discharge pipe at a point sufficiently above the pump to completely fill the pump casing. This method is usually adopted around mines, since when the pump is shut down a valve in the discharge pipe is closed.

The tail pipe, which is an important part of the installation, must be air-tight and laid so as to prevent the formation of air pockets; it also must be of sufficient diameter to accommodate the water without permitting the friction head together with the head required to produce the velocity in the suction pipe to become excessive. No attention is to be paid to the size of the suction opening on the pump, for it will usually be found that such openings are one or two sizes too small except for short suction lines and light suction

lifts. To start a motor-driven pump it is only necessary to prime it and throw the switch of the motor.

The following don'ts for pump runners are self-evident and cover practically all the operating points:

Do not run a pump without water.

The numerous bushings and sealing rings on the inside of a pump depend upon water for lubrication, and if the pump is run without it first being filled with water to the top of the casing, these parts will get hot and "freeze" solid, doing great damage to the pump; besides, the pump will not be able to discharge any water.

Do not run without oil in all the bearings.

Do not run with dirty oil in the bearings.

Do not let water get into the bearings.

Before starting up, satisfy yourself that the bearings are full of engine oil and that this is clean; furthermore, see that there is no water in the boxes. This can be done by loosening the drain plug on the bottom of the box to see if clean oil comes out and by measuring the depth of oil in the box. Do not rely altogether on the oil-level gage, as this gets choked up, giving false results. To keep the bearings clean drain all oil out of the boxes once a week and thoroughly wash out with two or three bucketfuls of water. The old oil should be filtered and used over again if it is not too gummy.

Do not run with stuffing-box glands tight.

This produces unnecessary friction, causing boxes to heat up and burn out the packing. Having the glands loose and allowing them to leak a little keeps the packing lubricated and the stuffing-boxes cool.

Do not run with leaky joints around pump.

This is unnecessary, and if not stopped in time will ruin the joint faces.

Do not run with water around motor.

Keep the baseplate of the pump clean, for when the motor is running the air suction produced draws the dirt and moisture into the motor.

Do not run when pump or motor vibrates excessively.

This is caused by the machines not being in line. It should be reported at once.

Do not run unless you are satisfied that all parts are in good condition.

Do not allow oil, grease or dirt to accumulate anywhere in the pumproom.

If properly cared for, a machine will run without giving any trouble.

Cautions—Report all trouble at once to the foreman. Keep pump and motor clean. There is no excuse for a dirty machine, as a few minutes' application of waste and elbow-grease every day will keep it clean. Do not allow scrap material to stay in the pumproom; see that it is loaded up and sent outside. Keep all supplies and material for operation and repairs in their proper places so they can be readily seen and found when required. See that the pump and motor run in correct direction. Keep the sump clean, also the snorer.

THE advantages of having centrifugal pumps for mine use are briefly as follows: Small floor space is required, therefore they can be installed in a small pumproom, quite an item where the roof is bad and the side walls crumbly. The machine is light in weight, therefore it is easily handled in the mines. The centrifugal pump requires no expensive foundation; in fact it can be set on skids. The pump can be quickly installed and can be direct connected to an electric motor, dispensing with noisy and troublesome reduction gearing. It has no valves or plunger packing and therefore will have no packing or valve troubles.

The machine gives an absolutely steady flow of water with no shocks to the pipe lines. This type of pumping machine can be started more readily with the column line full than empty; furthermore, it cannot do itself harm or break any pipe lines should the column line become blocked up or someone forget to open the valve on the discharge line before starting. It is a machine that can easily be started and stopped, and last, but by no means an insignificant advantage, it is a most reliable pump, with a minimum cost of maintenance, except possibly where the water is extremely acidulous or gritty.

A LITTLE thought should be given to installation in order to secure the best results in operation. The centrifugal pump should be set on a fairly good base and accurately lined with its motor. When I say "accurately," I mean *perfectly*. Although pumps are usually coupled to their motors by so-called "flexible" couplings, these are not flexible in the sense that they are a sort of universal joint. They simply permit end motion, and although they permit operation with the pump and motor slightly out of line, trouble will eventually follow if this is practiced. Piping should be connected to the pump squarely and accurately, for it is possible to strain and distort the pump casing if force is used to bring the piping and pump connections in line. As previously outlined, provision should be made for priming the pump. Check valves should be installed in the column pipe with a bypass around so as to drain the line. When the capacity has to be regulated by throttling, a gate valve must also be installed in the discharge pipe line; in fact, when the water is not highly acidulous, it is wise to install both a gate and check valve in all column pipes. But where the water is extremely acid, it has been found that the gate valves wear out quickly and that good leather-faced check valves last so much longer the gate valve is omitted and reliance is placed entirely on the check valve.

The strainer, or snorer, placed on the end of the suction pipe should have the mesh, or size, of the holes so small that nothing will pass through which is liable to lodge in and block the impeller. The total area of the snorer holes should be two or three times that of the suction pipe. There should be no less than 4 ft. of water over the snorer, for it is possible to draw air bubbles down through even 4 ft. of water, especially if the velocity through the snorer is high. Provision should be made for water-cooled bearings, water seals and suction glands, and the air vents should be piped properly. Also, with the larger machines, provision should be made for handling the heavy parts—that is, for taking off the top half of casings, and removing the shaft and impellers by means of a hand crane or chain hoist. If these few common-sense directions are followed and good water is pumped, the machine will run satisfactorily for years. If the water is acidulous it is necessary merely to change the sealing rings, the frequency of such renewals depending upon the quality of the water.

If the attempt is made to handle gritty and acidulous water with a centrifugal pump, the grit gets in between the fast-moving internal parts and acts like a first-class grindstone, cutting a working clearance of $\frac{1}{100}$ in. to $\frac{1}{8}$ or $\frac{1}{4}$ in. in a very few days. In such a case one is kept busy renewing impellers as well as sealing rings.

If followed rationally, the maintenance of pumps is a simple affair. Take, for example, a motor-driven pump, as this is the kind most commonly used around mines, and consider what parts are liable to wear out. If reasonable care is taken to keep the motor clean and dry, the only wear on this machine will be in the bearings and in the commutator of a direct-current

motor. The maintenance of such a machine, everyone will admit, is not a difficult problem. The parts most liable to wear on the pump are the shaft bearings, the shaft sleeves in the stuffing-boxes, the sealing rings on the impellers, together with the distance and stage bushings in multistage pumps.

THESE last-mentioned parts generally wear rapidly. It is an excellent plan to always keep an extra pump rotor on hand—that is, a shaft with impellers, rings and shaft sleeves, also an extra set of bearing liners. Then, when the pump declines in capacity (which is a general sign that the sealing rings are worn, allowing too much internal leakage or short circuiting of the water) it is an easy matter, with the split-case design of pump, to open the machine, remove the old rotor, put in the new one and bring the pump back to its original capacity and efficiency. The old rotor is then sent to the shops to be rebushed and held in readiness for the next time the pump falls down.

If this is done intelligently, and before the pump gets in too bad a shape, the operation can be repeated many times and the cost of repairs reduced to a low figure. There is one thing, however, that must be borne in mind, which is that the man making repairs on these pumps must be careful and painstaking, for if such a machine is left to the tender mercies of a "hammer, chisel and monkey wrench machinist," to whom everything is in line that can be forced in line with a "pipe wiggler" or a sledge, repair costs and troubles will more than double.

Even when pumping acidulous mine water it has been found that the wear on the impeller is not excessive, for with intelligent rebushing this may last from 18 months to 2 years. The wear on diffusion rings is still less, and that on the casing very slight. In a period of 10 years, with over 100 pumps of all makes and capacities in operation, and pumping all kinds of water, I have only renewed eight pump casings; and four of these have been repaired and either put in service or held in reserve as spares.

The builders of steam pumps advise, whenever there is any trouble with their machines, that the water end be thoroughly examined and to make sure nothing is the matter with it before hunting in the steam end or even touching or disturbing it. Similarly, in case of trouble with centrifugal pumps, I first look in the suction pipe and make sure that this is in proper shape before looking farther. A blocked suction pipe will cut down the capacity of the pump and give excessive end thrust. A leaky suction pipe will also cut down the capacity and give an unsteady and fluctuating pressure and flow, at the same time producing excessive vibration and noise in the pump.

If the holes in the snorer are so large that chips of wood, coal and other substances enter the pump and block the impeller vanes, trouble ensues. The sediment commonly called "yellow boy," deposited by some mine water, will often block up the snorer, suction pipe, impeller and pump. The only remedy for this, so far as I know, is to keep cleaning it out when a sufficient amount has accumulated to give trouble.

Thrust-bearing troubles can be greatly reduced if large thrust bearings provided with an efficient oiling system are used. When abnormal thrust occurs, as was mentioned before, examine the suction line first; then if the trouble is not located, open the pump, and it will possibly be found that one set of sealing rings is worn or something else is not quite right. Operating conditions are never perfect in the mines, and as the end thrust is sensitive to these conditions, it is important that the thrust bearing be of liberal proportions.

Centrifugal pumps, good as they are, should not be considered for every service, for when pumping gritty or extremely acidulous water the wear and tear is so excessive that the direct-acting wood-lined plunger pump is preferable. For pumping small quantities of water against high heads, the efficiency of the centrifugal pump is so low that there are other types more suitable

I would not recommend centrifugal pumps for capacities of less than 300 gal. per min. Even for this capacity the head should not exceed 60 ft. For heads of 100 to 150 ft. I would consider 500 gal. per min. the minimum, but when we get to capacities of 1000 gal. per min. the centrifugal pump can be used for almost any head with fairly good efficiencies. I have in mind two 1500-gal. eight-stage pumps working against a total head of 820 ft. that have been in successful operation for two years, giving a pump efficiency of about 68 per cent.

The efficiency of the centrifugal pump is low. A 300-gal. pump gives about 50 per cent. and a 500-gal. pump about 55 per cent. Larger pumps give anywhere from 55 to 72 per cent. efficiency. This latter efficiency is the highest of which I have actual knowledge, and that was secured from a machine of large capacity working under a head that was not very high.

In figuring the size of motor necessary, do not allow too great an efficiency for the pump. I usually prefer to take it at 10 or 15 per cent. less than that guaranteed by the pump builder, in order to allow for some emergency; for instance, the pump may be slightly higher in capacity and lower in efficiency than guaranteed. The working conditions as to head, etc., may not be exactly as planned and the motor may not quite come up to expectation, especially in a mine where it is subject to much dampness and dust. Figuring on this basis, it is better to have a little too much capacity than just a shade too little, for the variation often means the difference between no trouble and lots of it.

EACH centrifugal pump must be built for a given capacity and given head when running at a given speed, and it is herein that the maximum efficiency lies, because the capacity and head cannot vary materially from these fixed conditions without a considerable loss in efficiency. This means that a centrifugal pump built for a certain head and driven by a constant-speed motor cannot be used at any other place where the head is much greater or much less without a sacrifice in efficiency. The capacity of the pump when driven by a constant-speed motor cannot be changed or varied except by the uneconomical method of throttling. These things should be understood and taken into consideration.

Except for boiler feeding, I have never thought seriously of the steam-turbine-driven centrifugal pump for use around the mines. The steam economy of the

small-size noncondensing turbine is so low that nothing is gained by its use, while around the colliery, especially inside the mines, the constant endeavor is to eliminate the steam lines.

The electrically driven centrifugal pump has a field to itself in the pumping out of large bodies of water which are a long distance from the shaft and from the boiler house. This machine then avoids the excessive condensation losses in the feed line to the steam pumps, and the crumbling of the roof due to the heat generated by such a line even when well covered.

The large electrically driven plunger pump is a cumbersome and costly machine with a tendency to smash itself just when most needed. Compare a 1000-gal. 200-ft. head centrifugal pump with a duplex, triplex or quintiplex plunger pump for the same service, and you will agree with me that the latter machine must have some great advantage over the centrifugal to be considered.

For shaft pumping, where a good duplex compound steam pump can be installed close to the shaft and a good boiler plant located not far from the head of the shaft, the centrifugal pump has a more formidable rival. It then requires more careful consideration as to which machine to install, but it is safe to say that the greater the amount of water to be handled the more favorable are the conditions for a centrifugal-pump installation.

THE steam-turbine-driven centrifugal boiler feed pump whenever installed at colliery boiler plants has been well liked, but I would not recommend them for boiler plants of less than 3000 boiler-horsepower, since below this they are so small and run at so high a speed that it does not take much to put them out of order. Furthermore, the first cost, steam consumption and upkeep will be higher than for the direct-acting steam pump. For boiler plants for 8000 hp. or over, I think they are superior to the plunger pump. Between 3000 and 8000 boiler-horsepower, the selection of a pump hinges largely upon local conditions and individual preference.

For boiler plants working under extremely variable loads, and where there is plenty of exhaust steam available from other sources for heating the feed water, the centrifugal pump is not so economical as the steam-driven plunger pump; but where all of the exhaust steam may be utilized for heating the feed water, steam economy is no object.

Interesting Plane Installation

An interesting and rather novel slope installation is that at the Cunard mine, operated by the Cunard Coal Co. at Morrisdale, Pennsylvania.

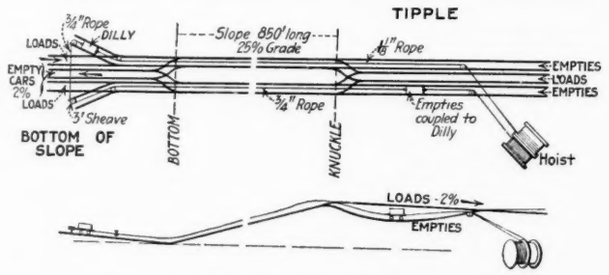
This is a double-track slope with cars working in balance and on the tail-rope system. The length from the knuckle to the bottom of the slope is 850 ft. and the grade 25 per cent. Two haulage ropes run from a Lidgerwood single-drum electric hoist over sheaves under the tipple, one to each dilly car or barney. These haulage ropes are 1¼ in. in diameter. A ¾-in. diameter tail rope, passing around sheaves at the foot of the slope, connect the two dilly cars.

The rock conditions in the mine made it impossible to use disappearing barneys, and therefore a switch arrangement on each track was put in at the bottom of the slope, in conjunction with a center track. When a trip of empties reaches the bottom of the slope the dilly is uncoupled, and the empty cars are switched onto the center track, down which they run by gravity, this track having a 2 per cent. slope for a short distance. They are then picked up by the mine locomotives.

The dilly is pulled by the tail rope a short distance down the main track and then takes a side switch at the end of which is the tail-rope sheave. The loaded trip is dropped in by gravity onto the main track, past the switch, and the dilly is then hauled in from its switch behind the cars and brings the loaded trip up the incline to the tipple. The two main tracks are of course used alternately for loaded and empty trips.

At the tipple a switch from each main track to a center track is located just beyond the knuckle. The center track has a 2 per cent. grade down from the knuckle to near the dump. As a loaded trip comes up it is switched onto this center track. The dilly is then hauled past the switch, still remaining on the main track. The loaded cars run by gravity down the center track to the dump.

After passing the knuckle, each main track slopes down at a slight grade, runs level for a short distance,



SUCCESSFUL PLANE INSTALLATION

and then runs on an upgrade to a point near the dump. The dilly passes the knuckle and drops down the incline, being controlled by the tail rope. Each loaded car is run on the center track to the dump, emptied, passed through a kickback and allowed to run down to the main track until it reaches the dilly, to which it is coupled. The empty trip is thus made up. This empty trip is then pulled by the tail rope until it passes the knuckle, when it drops down the incline under control of the main haulage rope.

The advantage of this method is that the dilly, being in front of the trip, the downward journey is controlled by the heavy haulage rope. The one dilly connection is the only one that has to be watched and the individual couplings of the cars only carry a stress for a short distance when mounting from the flat empty track to the knuckle. This grade is too slight and too short to make a break in the trip dangerous. The slight grade on the center track makes it easy to run the cars onto the tipple, and they return from the dump to either main track by gravity. The importance of having the stress of the down trip carried by the dilly on such a sharp slope as 25 per cent. is readily apparent.

It may be of interest to state that the principal reason for laying out the tipple on this plan was to insure safety. There are many safety devices for preventing trips running away down an incline, but none

is so sure as an adverse grade for the cars on top, where the trips are made up.

This plan required the installation of a tail-rope system, in order to pull the empty trips over the knuckle. The additional expense was more than compensated for through the satisfaction of knowing that a runaway trip down the slope (with possibly fatal results) did not depend upon the negligence of any man.

The trips are made up of 10 cars each having a capacity of 1¼ tons. One man takes care of the switches at the bottom, dropping off the dilly and picking up the loaded cars. He handles a present output of 860 tons and will ultimately take care of a capacity of 1500 tons, for which the slope is designed.

The hoist is a Lidgerwood electric machine having a single drum keyed to the shaft. This drum is 60 in. in diameter, with a 67-in. face, having a central dividing flange. Each half of the drum is designed to hold 1000 ft. of 1¼-in. diameter rope. A powerful post brake of the floating type is provided and acts on a 72-in. brake flange. The gearing is steel throughout. The motor, of General Electric Co. make, is a 165-hp. machine and runs on three-phase, 440-volt, 60-cycle current, making 435 r.p.m. This hoist has an average duty of 7400-lb. pull at 400 ft. per min. and is designed for a transverse stress of 15,000 lb. This slope has been in successful operation for several years.

John P. White To Advise Fuel Dictator

John P. White, who was appointed adviser to the United States Fuel Administrator, and whose appointment was approved by President Wilson on Sept. 14, 1917, is international president of the United Mine Workers of America. He is a resident of Des Moines, Iowa. Mr. White, as assistant to the fuel administrator, will deal with labor problems.

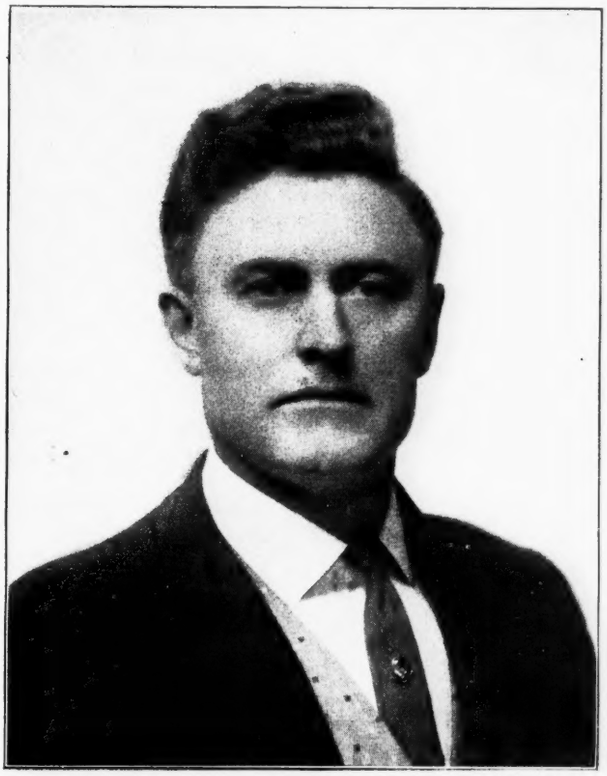
Mr. White was born in Coal Valley, Illinois, Feb. 28, 1870. He migrated to Lucas, Iowa, at the age of 12, with his widowed mother. He attended the public schools until the age of 14, when he entered the coal mines as a trapper boy. He filled every position in and about the mines from trapper boy to miner.

In August, 1899, he was elected secretary-treasurer of the Iowa miners and president in 1904. He was elected vice president of the International union and served during the year of 1908.

Declining reëlection to International office, he was again chosen head of the Iowa miners and served them in 1910 and 1911. He assumed the office of International president Apr. 1, 1911, which position he has since held continuously. His present term will expire Apr. 1, 1919. Mr. White represented the American labor movement as delegate at the World's Mining Congress in London, England, in 1916.

The membership of the United Mine Workers on Apr. 1, 1911, was 256,000, which has grown under Mr. White's administration to a membership of 450,000. The joint relationship of making contracts by the coal operators and miners meeting jointly, which had been abrogated, was rehabilitated during Mr. White's first year. In 1912, he secured an increase of 5.26 per cent. for the bituminous mine workers and a 10 per cent. increase for the anthracite mine workers. In April, 1916, he secured for the mine workers in the bituminous coal industry an increase of 5 per cent., a universal eight-hour day and universal mine run, being the consummation of the ideals for which the mine workers had struggled since the existence of the organization. For the anthracite mine workers he secured nine-hours' pay for an eight-hour day, and an increase ranging from 5 to 17½ per cent. and recognition of the union.

Due to abnormal conditions and the high cost of living, President White called the operators of the bituminous industry to a special informal joint conference in March, 1917, and in April secured an increase for the bituminous coal miners of 20 per cent. Immediately following the bituminous conference, the anthracite operators granted a like increase at his request.



JOHN P. WHITE

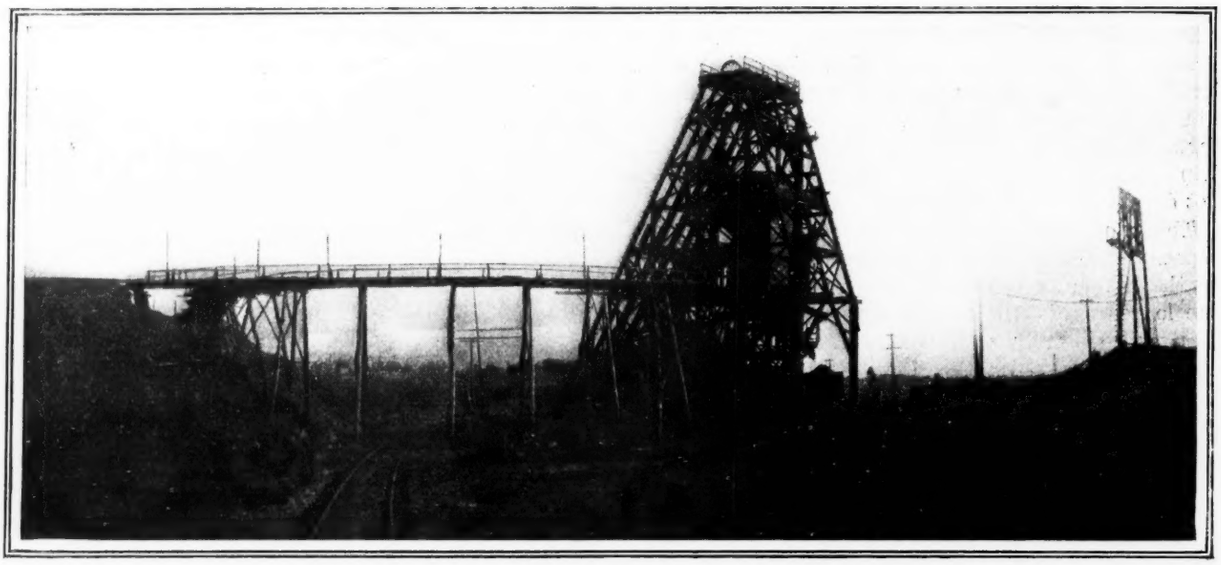
President White's greatest single achievement is possibly his success in winning the mine workers to a policy of working pending settlements during the periods of making contracts. Before he became president, when contracts expired and new contracts had not been negotiated, the mines of the nation closed down, union and nonunion alike.

Coming Meetings

American Institute of Mining Engineers will hold its next meeting at St. Louis, Mo., Oct. 8 to 13, with headquarters at the Planters' Hotel. Secretary, Bradley Stoughton, Engineering Societies Building, New York City.

Third National Exposition of Chemical Industries will be held in the Grand Central Palace, New York, week of Sept. 24.

American Association of Mechanical Engineers will hold its annual meeting Dec. 4 to 7 at the Engineering Societies Building, New York City. Secretary, Calvin W. Rice, 29 West 39th St., New York City.



TYPICAL EXAMPLE OF A CREOSOTED TIMBER SHAFT HOUSE

Wood-Preserving Opportunities in the Anthracite Field

BY KURT C. BARTH

OPPORTUNITIES for wood preservation, both below and above ground, are many. The destruction by decay of mine timbers, exclusive of such as are used in surface structures, approximates 50 per cent. of the consumption. Insects are also active, and although their toll is relatively small, their action provides ready entrance for fungi. Both causes can be removed by the proper preservative treatment of timbers.

Underground and shaft-timbers that are permanent in character—that is, are not exposed to destruction by mechanical wear before the expiration of their natural life, or the usefulness of which does not cease ere the advantages of preservative treatment can be realized—should be creosoted.

Particular reference is made to gangway sets that are permanent in character and constructed of sawed timbers, also to such timbers as are used in the shafts that are not exposed to severe mechanical abrasion. For these purposes any wood available, if of proper size, may be used. As stated by Howard F. Weiss ("Preservation of Structural Timbers," Chapter XII), "When treated, red oak, maple, birch, beech, hard pines, fir, elm, etc., are good woods where great strength is required, and for workings requiring less strength almost any wood having an inch or more of sapwood can be used to advantage."

In order that creosoting may be effective the timbers must be seasoned properly, and probably the first step to be taken by mines that wish to practice the economy of wood preservation is to arrange their operations so that timbers may be cut or purchased sufficiently in advance to permit of their being properly seasoned. All timbers, except probably such as are used in very short-lived workings, should at least be peeled, whether they are to be creosoted or not. To obtain a reasonable reduction in the moisture content of timbers they should be seasoned at least for three summer months, or the equivalent during other seasons of the year.

It may seem that these requirements are somewhat of a hardship, or probably inconvenient for the mines to follow, but if properly arranged a sufficient stock of timbers can always be carried on hand so that it will not be necessary to utilize green material. The investment can be equalized by purchasing a season's requirements during the period of lowest prices, and even if no saving of this nature can be effected, the interest on the investment may be charged to the cost of treatment without reducing materially the profit derived from the practice of wood preservation.

Before treatment, all timbers should be framed, bored and cut to size as nearly as is possible. However, should it be necessary to cut into the treated timbers before placement, the resulting abrasions of the surface must be given an additional treatment, consisting of the application of two coats of the preservative. It must be borne in mind that the effectiveness of the treatment depends upon the length of time that the film of creosote enveloping the wood remains unbroken.

In general, and considering the average conditions, it would seem to me that the open-tank process is most advisable for the treatment of underground timbers. The exception proves the rule and applies to those timbers that are exposed to severe mechanical abrasion, in which case the pressure process is recommended. In some cases the increase in life desired may be but a few years. Under such conditons the brush method of treatment is to be recommended, and also when treatment by the open-tank process is not available.

The open-tank process consists of alternate hot and cold treatments of wood with refined coal-tar creosote oil by immersion and continuous soaking in open tanks without artificial pressure, requiring no mechanical

apparatus other than tanks, hoists (in some cases) and means of heating the oil. The procedure is as follows: After the lumber that is to be creosoted has been completely framed, bored and cut to size, it is given the hot treatment—that is, is immersed in a bath of oil that is maintained at a temperature of between 150 deg. and 200 deg. F.—and is continued for varying periods, depending upon the species of wood and the size of the timber. Immediately thereafter the timber is given the cold treatment—that is, immersed in a cold bath of refined coal-tar creosote oil—which is maintained at a temperature not in excess of 100 deg. F., for a length of time that should be at least equal in duration to the hot bath.

THE theory of this process is that in the hot treatment the heat of the preservative expands and expels a portion of the air and water contained in the wood cells. Then upon immersion in the cold bath, or when subjected to the change in temperature caused by the cooling of the creosote, there is a partial contraction and condensation of the air and water that remains, resulting in a slight vacuum within the wood. This is aided by atmospheric pressure combined with capillary action between the wood cells and the preservative, which achieves the actual impregnation.

Modifications conforming to special requirements and local operating conditions are necessary on practically all large jobs, and may be made without affecting the efficiency of the treatment. This feature is one of the most important advantages of the open-tank system. Lumber of small cross-section can often be effectively treated by immersion for short periods in the hot bath alone, especially when of species not particularly resistant to treatment. Heavy timbers are most economically treated by continuous immersion in one tank during the entire procedure—that is, upon expiration of the hot treatment the timbers are not removed to a "cold tank," but the steam is shut off; or if an open fire is used to heat the oil, that is quenched, and both the oil and the wood are permitted to cool to about 100 deg. F. Again, if loblolly pine timbers or any species that readily absorbs creosote is to be treated, the cold treatment may sometimes be dispensed with.

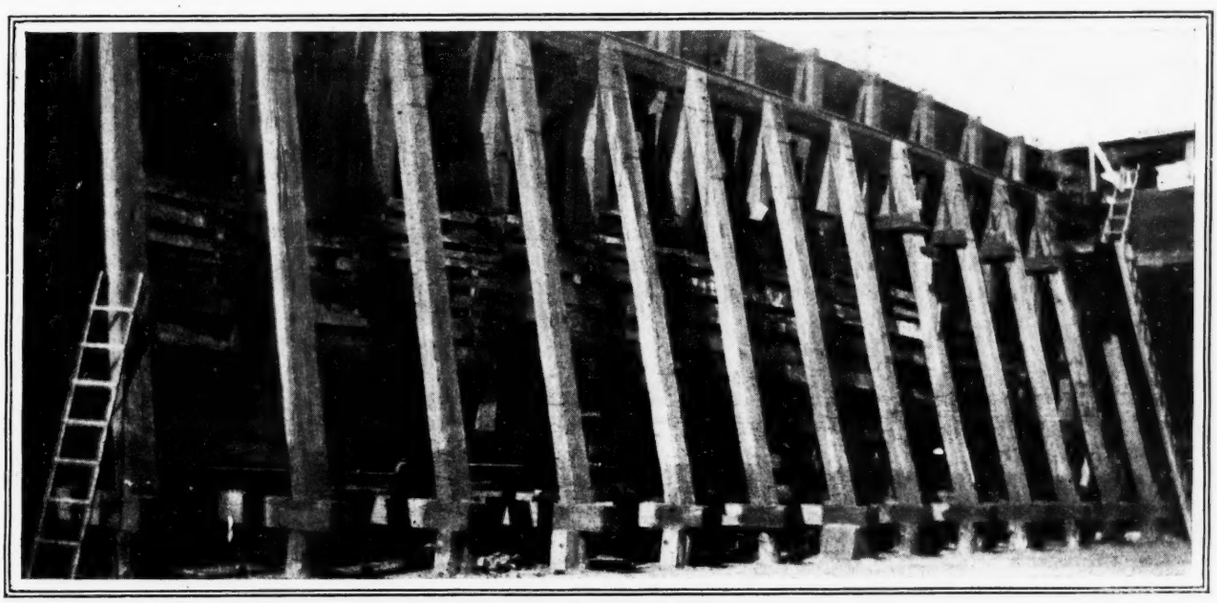
The dipping method may also be styled a modification of the open-tank system and is intended for use when it is more economical, because of the saving in labor, to coat the lumber by short immersion than to apply the oil with a brush. For this purpose the oil may be maintained at an average temperature of 150 degrees.

The brush method of treatment, though not so effective as other methods, may be depended upon for an increase of about five years in the life of the timbers so treated. It consists merely in brushing the oil on the timbers either at designated points of contact or over the entire surfaces. At least two coats heated to about 150 deg. F. should be applied, and it is desirable that the ends of timbers and all intersections should receive three coats. The chief reasons for such failures as have occurred with this method are carelessness in its application; in fact, the utter simplicity of the treatment is the main objection, and it would serve as a protection to apply the final coat of the preservative before placing the timbers.

However, the brush method is decidedly worth while. It is an established fact that, properly applied, it has increased the life of structures far more than would be sufficient to warrant the expense and trouble. Many telephone poles and electric-light poles so treated bear evidence of the relative efficiency of this method, and under certain conditions such treatment is made the standard.

SURFACE timber structures present a somewhat different problem. The conditions to which they are exposed are considerably less favorable to the development of decay than those prevailing underground, but are sufficiently so to make the preservative treatment decidedly advisable.

The average life of timber trestles or similar structures is placed at ten years. Treatment by the brush method places the depreciation period of the structure



COAL STORAGE-POCKETS, TIMBERS OF WHICH WERE TREATED AT ALL POINTS OF CONTACT
All the treated portions were in a perfect state of preservation after fourteen years of service

at 15 years, whereas thorough creosoting by the open-tank process increases the life of the structure almost indefinitely, although the depreciation period would be conservatively placed at 25 years, owing to the mechanical factor involved. Where the brush treatment is applied only at points of contact the structure may be painted in the same manner as heretofore. It would, however, be more economical to apply the oil as a paint, a practice which is being followed by several mining companies.

Among surface structures may be classed tipples, elevators, trestles, pockets and chutes, also other miscellaneous buildings. Where mining cars and skips are built of wood such portions as are not early destroyed by wear may also be treated to advantage.

IT is possible in this article only to touch upon this subject briefly and merely to point to a few instances where creosoting of timbers used in such large quantities by the average coal mine will achieve an important saving in the annual cost of maintenance. It is, of course, realized that probably every mine has particular conditions that must be given individual consideration when making definite recommendations, but nonpressure treatments have been developed so that they may be made adaptable to nearly all conditions, satisfactory results being obtained in each case.

Anthracite mines provide greater opportunities for the practice of wood preservation than bituminous mines, nevertheless the following rule will apply to both: All timbers, whether used above or below the ground, exposed to decay and the ravages of destructive insects, where the period of service to be rendered requires an increase of the natural life, should have preservative treatment. Of course, only peeled and properly seasoned timber may be treated.

Another important factor that must receive careful consideration if full benefit is to be derived from creosoting is the character and grade of the preservative used. It is hardly necessary to refer at length to the

MINE TIMBERS NOT CREOSOTED; NOTE DECAY

record of coal-tar creosote oil for the purpose of proving its efficiency. That is beyond doubt. Anyone who has given the matter careful study and who has called into consultation such agencies as the Government provides, must realize that coal-tar creosote oil is the standard for the preservation of wood from decay.

Nonpressure treatments require a refined coal-tar creosote oil—that is, the oil must be made fit to meet the particular requirements of the conditions under which these treatments are employed. Refined coal-tar creosote oil is merely a pure coal-tar creosote that has been refrigerated for the purpose of obtaining a liquid

CREOSOTED MINE TIMBERS

oil, free from salts, distilled to a standard specification that combines the highest possible toxicity with permanence, and of a viscosity that permits of ready penetration. Such an oil has been placed upon the market within the last few years and is readily available throughout the country. It is due to this fact that the nonpressure treatments have been developed and have become popular wherever their employment is warranted.

In conclusion, wood preservation practiced by coal mines will result in a surprisingly large saving in the annual maintenance costs for timber and replacement labor. The cost of treatment is relatively small, the equipment necessary comparatively simple, and the actual procedure of creosoting may be conducted without interfering with any present activities. Timber suitable for mining purposes is becoming scarce, and that which is available more expensive. Thus wood preservation is of increasing importance to mines.

Lignite but Little Appreciated

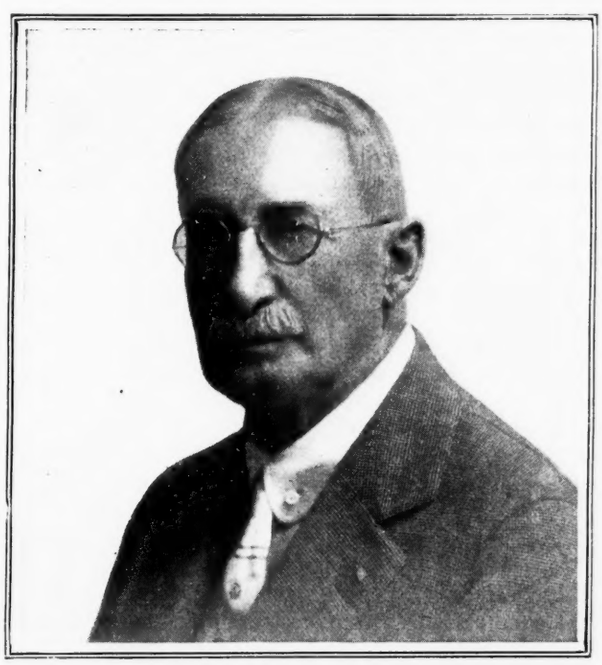
Billions of tons of lignite are found in Saskatchewan in the vicinity of Estevan in the southern part of the province just mentioned. Nevertheless anthracite from Pennsylvania is brought into neighboring towns in competition with this lignite. The Estevan fuel contains about 26 per cent. of hygroscopic water. The ash content is low, being under 7 per cent. and the sulphur content is also low, running only about $\frac{3}{4}$ of 1 per cent. But these good qualities do not redeem the fuel, for the water takes so much heat for volatilization. When dried in the air the lignite slacks rapidly and fires from spontaneous combustion. When burned the light gases are distilled before the fixed carbon reaches the temperature of ignition and in ordinary furnaces these gases escape unburned. The lignite will not coke and when thrown on the fire it crumbles quickly and passes through the grate bars.—S. M. Darling, in "The Carbonizing and Briquetting of Lignite."

Who's Who In Coal Mining

H. G. Williams

When one speaks of the Utah coal-mining industry, it is difficult to avoid associating the name of H. G. Williams with the subject. He is dean of all the early pioneers in the Utah field, and although his active participation in mining affairs has been less during the past year or two, his advice is still sought by the younger men who have been placed in control.

Mr. Williams, who is now consulting manager of the Utah Fuel Co., divides his time between Los Angeles and Salt Lake City. For years he was the general manager of this, the largest coal company in Utah. He was born on a farm in Wisconsin in 1856 and received his early education at Merton, Wis., in a preparatory school for the University of Chicago. He entered the latter institution and continued his studies



H. G. WILLIAMS
Consulting Manager of the Utah Fuel Company

until his junior year, when he quit because of ill health. He never returned to the University to finish his course.

In 1877 he went West, securing employment in the engineering department of the Atchison, Topeka & Santa Fe R.R. in Kansas. His first position was that of rodman, from which humble position he soon advanced to be division engineer, holding this latter place from 1877 to 1881. He then accepted a position as superintendent for the Capitol Iron Works in Kansas, remaining with this concern for two years. His next job was with the Osage Carbon Co. in Kansas, a subsidiary of the Atchison, Topeka & Santa Fe R.R. This was his initiation into coal mining.

Eighteen months later Mr. Williams accepted a place as mining engineer for the Raton Coal and Coke Co. in New Mexico, and soon after this was appointed chief engineer for all the coal interests of the Santa Fe road. The mines under his engineering supervision were located in both Colorado and New Mexico. They included the Raton and San Pedro companies in New Mexico and the Trinidad Coal Co., also the Canyon City Coal Co. in Colorado. This work occupied his attention until 1888, when he accepted a position as chief engineer of the Pueblo Smelting and Refining Co. at Pueblo, Colorado.

In 1891 Mr. Williams continued his journey west, becoming assistant superintendent and engineer of the Pleasant Valley Coal Co. with mines at Castle Gate, Utah. This company is now known as the Utah Fuel Co. and has added largely to its mining interests since those early days. He was directly under W. G. Sharp, who is now president of the United States Mining, Smelting and Refining Co., and received an excellent training under this very able and efficient mining man.

Mr. Williams had made a good record, however, during his stay in Colorado, and he was called back to the latter state to become the assistant general manager of the Pueblo Smelting and Refining Co. He remained with this company until 1896, when he was offered, and accepted, the job of general superintendent for the Pleasant Valley Coal Co., succeeding Mr. Sharp, who became general manager.

In January, 1902, Mr. Sharp resigned and went east, and Mr. Williams was appointed general manager of the Pleasant Valley Co. In the meantime the Utah Fuel Co. was organized, and he served as manager of both companies. The next few years was a period of active development in the Utah coal industry, and much of the success of the development work was due to the tireless efforts and good judgment of the Utah Fuel Co.'s manager.

In 1914 Mr. Williams resigned as general manager because of the ill health of his wife, and at the suggestion of his family physician moved his home to California. The company asked him to continue as consulting general manager, so that today he still spends from one-half to two-thirds of his time in active service in Utah.

No man who has ever participated in the mining developments of the Far West has earned a higher place in the esteem of the mining fraternity than H. G. Williams. His life has been one of substantial progress, and many a friend in Utah and elsewhere would lay down his all if he could thereby render a service to "Daddy" Williams—the Utah Fuel Co.'s "Grand Old Man."

Householders Waste Coal

If every householder and owner of a small house-heating plant in the State of Illinois would use reasonable care in the purchase of his fuel and in the operation of his plant, the saving would be equivalent to 4,500,000 tons of coal. According to a circular recently issued by the Engineering Experiment Station of the University of Illinois, such a saving is easily within the range of practical attainment. Applied to the entire United States, intelligent attention in the operation of house heaters would result in the saving of more than sixty million tons of coal.

Association Letter Urges Cooperation

Based on procedure outlined by Dr. Garfield, the National Association of Coal Operators has sent the following suggestions to all association secretaries:

1. Since the Federal authorities must consider conditions in districts rather than in individual companies or mines, coal producers will facilitate matters by arranging to act by associations or by groups covering districts generally recognized in the trade, such as the Pittsburgh district, the Fairmont, the Franklin County, etc.

2. Operators in each district which desires prices changed should make written application to Dr. Garfield for a change.

3. This written application should be accompanied by the following data:

a. A consolidated statement for the district, showing its average cost for the year 1916 and for each month of 1917 to date. This statement should be compiled from cost reports of the different operators represented, who should prepare their cost reports on the cost forms approved and issued by the Federal Trade Commission, and in accordance with the Commission's instructions therefor. Copies of these forms and instructions reprinted by the National Coal Operators are sent you herewith.

b. The cost reports of the different operators which have been combined in the consolidated statement should be attached thereto and forwarded with it.

c. A consolidated statement for the district giving tonnage sold and receipts f.o.b. mines by grades and sizes of coal for the year 1916 and by months to date for 1917. This should be accompanied by the reports of the individual concerns combined therein.

d. A brief statement explaining the character and chief uses of the coal from your district; that is, high volatile, steam byproduct, domestic, etc.

e. A brief statement explaining what are the chief markets for the output of your district, and what other coals are your chief competitors in such markets.

If operators in your territory follow the above course of procedure, they will save much waste of time and money. Nothing can be gained by sending committees to Washington until the above information has been properly compiled and forwarded to Washington and until the Federal Trade Commission has had opportunity to examine it.

Pending decision by the Federal authorities respecting price changes, the National Association of Coal Operators strongly urges that no mine be closed; that sales be made subject to change in present prices by the Government; and that all producers coöperate fully with Dr. Garfield, his staff and other agencies of the Government in the present emergency.

Coal Embargo Explained

One of the important developments of the week was the request of the fuel administrator addressed to the Export's Administrative Board that no coal be shipped out of the United States without specific licenses and that the application for such a license receive the approval of the Fuel Administration. In this connection, the following explanation was issued:

"The action is specifically for the purpose of protecting the northwest part of the United States, which has been complaining that it has not been receiving its fair share of the coal sent to Lake ports. An investigation by the Fuel Administration substantiated this complaint. It was found that plenty of coal was reaching the Lake ports, but it was not getting through to the Northwest. In the period between Aug. 24 and Sept 6, out of a total of 1,755,812 tons, 530,973 tons, or 30.2 per cent., had been shipped into Canada. This is far in excess of the proportion of Canadian exports by Lake boats in normal times. The Fuel Administration does not intend to cut off Canadian exports, but with this supervision it will be able to equalize the distribution of coal, and see that the Northwest and Canada both get their fair shares."

Vigorous complaints were registered during the past week at the office of the Fuel Administration and at the office of Judge Lovett concerning the effect of the priority order intended to relieve the coal shortage in the Northwest. It was pointed out that this order was having the result of leaving Ohio factories without fuel. No formal modification of the priority order was made, but Judge Lovett, through the Commission on Car Service, was able to adjust the matter to the satisfaction of many of those who complained.

New Price Schedule on Coal

Having been convinced that a general advance in the present schedule of coal prices is necessary, the Fuel Administration is understood to have practically completed a new schedule of prices. This schedule is said to name prices on a district basis. The investigations of the Fuel Administration have gone far enough, it is declared, to indicate that the Peabody schedule of prices came nearer being equitable than were those based on the investigation made by the Federal Trade Commission. While it is anticipated that the corrected schedule may fix prices a shade lower than those agreed upon in the Peabody conference, an improvement over that arrangement will be the subdivision of the state rate with recognition of those districts where costs are high.

It is becoming increasingly plain to those watching closely the development of the situation, that Dr. H. A. Garfield, the fuel administrator, is not in accord with many of the views held by Commissioner Colver, of the Federal Trade Commission. These differences are said to be so pronounced that Mr. Colver no longer is being looked to for counsel in the matter of general

policy. The Federal Trade Commission's role in the coal situation is believed to have been reduced to that of an accountant, as it is now simply furnishing data with regard to costs and checking up the statements submitted by operators.

The appointment of Rembrandt Peale on the staff of the fuel administrator as the representative of the bituminous operators makes it very clear that there is to be no important recognition of the work done by Francis S. Peabody and the Committee on Coal Production of the Council of National Defense. As the Fuel Administration naturally will succeed to many of the important activities which have been directed by Mr. Peabody, it is probable that the Committee on Coal Production will enter a less active stage. Most of the men connected with the Peabody organization have been loaned to Dr. Garfield. Occasional meetings of the Committee on Coal Production will be conducted and every effort to be helpful will be made, it is stated. L. A. Snead, one of the members of the Peabody organization, is being kept very busy seeing that Government requirements are met and in securing coal for emergency needs, wherever they may occur. E. W. Parker is in charge of similar work, where anthracite coal is concerned.

The appointment of John P. White as a member of Dr. Garfield's staff is in line with recommendations made by many operators. Mr. White is occupying offices at the Fuel Administration building.

Retail Prices To Be Fixed Soon

That retail prices will be fixed before the first of October was set forth by Dr. Garfield in the following announcement:

Arrangements are rapidly reaching a conclusion which will enable the Fuel Administration to make an announcement concerning the price of coal at the retail dealers' and for small manufacturing plants which have relied upon spot coal.

Before the end of the present month prices will be announced. It may be necessary to make them tentative, as in the case of the prices fixed for coal at the mines.

Local committees will be asked to investigate and report upon costs. It is obvious that these will vary considerably between localities and between city and country districts. Care will be taken to include all items which ought to be included, for there is no disposition on the part of the Fuel Administration to deprive the local dealer of his fair measure of profit.

In this connection, Mr. Garfield called attention to the rule governing the appointment of local committees by the state fuel administrators now being chosen. Leading citizens of ability will be placed upon the committee, but the rule states that local coal dealers are excluded. This is with no purpose to discredit the local dealers. They are as patriotic and reliable as any other class of citizens. The rule is made rather to save them from the kind of embarrassment that inevitably arises when men are called upon to pass judgment upon others in their own line of business and to pass upon conditions which are intimately concerned with their own livelihood.

Although there is a shortage of cars and of labor, Mr. Garfield states that by coöperation between Judge Lovett, of the Priority Board; the Interstate Commerce Commission and others vested with powers over transportation cars can be had. He himself has power to apportion and distribute the coal.

Curtailment of coal exports is being considered by the Exports' Administrative Board. An announcement in this connection is expected in the near future.

How Did the Government Arrive at the Prices Fixed?

There is considerable speculation among the coal operators visiting Washington as to how the Government's prices were arrived at. Many believe that they were obtained by taking the average realization from coal produced during 1913, 1914 and 1915, as reported by the Geological Survey. To these prices in each case an arbitrary amount ranging from 75c. to $1 appears to have been added.

It is known that the Federal Trade Commission did not have comprehensive figures of costs, except on the navy acceptable mines and on mines in a few scattered localities throughout the country. It is apparent that a differential of 15c. in favor of New River over Pocahontas must have been arrived at by the showing of the navy acceptable mines in these two districts. It is pointed out that these mines are by no means justly representative of the districts.

Coal Production Increasing

Coal production during the week ending Sept. 1 was 72 per cent. of the full time capacity of the mines. This compares with 68.5 per cent., the ratio for the preceding week. These figures were obtained by the Geological Survey and announced in the weekly report of Sept. 15. The principal cause of the increased production was due to the resumption of operation in the mines affected by the Illinois strike. An increase also is shown in Indiana and western Pennsylvania. Southwestern Virginia continues to be the banner district, its ratio of tonnage produced to full time capacity being 91.7 per cent. The poorest showing is made by the eastern Kentucky and Tennessee district, where the continuation of the strike has restricted tonnage to one-tenth of the full-time capacity.

For the week ending Sept. 8, shipments of coal showed a decrease of 8 per cent., as compared with shipments of the week preceding. As Labor Day fell in the week under review, most of the decrease is ascribed to that cause.

The largest individual factor which limited production during the week ending Sept. 1 was car shortage. Labor shortage and strikes were factors second in importance. The extent to which they limited production was 10.3 and 6.9 per cent. respectively.

Coke production during the week ending Sept. 8 showed an increase from 69.1 per cent. to 73 per cent. The shortage of yard labor continues to be the principal factor in limiting production. Losses from car shortage decreased from 7.6 per cent. to 4.6 per cent.

Full coöperation was offered Fuel Administrator Garfield by the Tidewater Coal Exchange by a delegation of its members who conferred with Dr. Garfield recently. Dr. Garfield stated that he already is familiar with the efficient work which has been done by the Exchange in avoiding detention to cars and ships and in bringing about maximum capacity loading. The delegation consisted of Arthur Hale, S. Pemberton Hutchinson, Rembrandt Peale, E. B. Chase, L. A. Snead and Kuper Hood.

The Labor Situation

General Labor Review

Apart from the grievous strike that perplexes southeastern Kentucky and Tennessee, there are no strikes of magnitude, north, south, east or west. At any time, though, there may be a recrudescence of trouble. The index figures for the cost of necessities have slightly declined, though the trend has not yet reached foodstuffs. This shows that the cost of living is a little bit lower than it has been. The prospect of price regulation and the withdrawal of many British orders is preventing wage increases in our munitions industries, so the high, higher and still higher wages paid in the shops of the munition makers probably do not now disturb the orderly production of coal as much as in the past, though Illinois is now complaining of much competition from war plants. The Federal Government does not view with complacency the attempts made to secure a new scale. Even a discussion without a strike or even without a suggestion of a strike is not approved. Every effort is being made to convince John P. White that he should be as patriotic as he announced himself, and suppress profiteering in the coal-labor circles as completely as it has been suppressed in the coal-producing business. It would be well if he would study carefully the lines from the speeches of Thomas and Wilson which we quote in the insert on this page. The Philadelphia & Reading Coal and Iron Co. has announced that its employees will not be charged the price fixed by the Government for pea, namely, $4 per ton. The rate to them will be only $2.25. The men threatened to strike if $4 was charged. This was only a threat to strike. The Lehigh Valley Coal Co. had on Sept. 5 an actual suspension at Beaver Meadow, where 600 men and boys quit because, as they claimed, the miners were only getting one and two cars a day.

Mr. Thomas, the labor representative in the recent British Mission to the United States, in his suggestions to the Committee on Labor of the Advisory Commission of the Council of National Defense, when recommending conduct predicated upon his British experience declared, "Let the employer say: 'I am not desirous of taking advantage of the war to break down something that I never believed in.' On the other hand, let the employees say: 'While anxious to maintain the law, we are not anxious to take advantage of the war to enforce something during the war that we could not obtain in peace times.' With both sides recognizing that, I repeat, I believe they will find a solution."

Secretary of Labor Wilson apparently indorsed this view when, on Apr. 23, 1917, in an explanatory statement on behalf of the Council, he said: "That where either an employer or an employee has been unable under normal conditions to change the standards to his own liking, he should not take advantage of the present abnormal conditions to establish new standards." A strike in Kentucky and Tennessee against this principle is in progress, and the United Mine Workers of America is backing the strike with money and influence, though several union leaders are on the Council of Coal Production and J. P. White, the president of the union, is appointed adviser to the Federal Coal Dictator.

Just at present, central and western Pennsylvania have no labor troubles, except along Salisbury branch near the West Virginia line, in Somerset County, where a strike for the recognition of the union is in progress at nearly every mine. Early in this month Miss Fannie Sellins, a union leader, showed her mettle by testifying against Harry Pappas and Harry Greco, two Greeks, who tried to get her to advance them money for a campaign of violence against the mine operators. The union had been blamed for dynamiting, but was doubtless innocent.

In Colorado, the state industrial commission is making a trip through the mining villages of the Colorado Fuel and Iron Co. and hearing the complaints of the mine workers. The main difficulty, as might be anticipated, is recognition of the union. All the union mine workers want is to have the men who don't belong to the union fired in the name of liberty and democracy.

Grievances Restricted to the Court

It is a pleasure to record that the mine workers in the anthracite region are everywhere refraining from strikes. They have presented their grievances to the Conciliation Board like good citizens. A strike is like a fight from which we all do well to refrain, and it is a pleasure to commend the mine workers for seeking decisions not in abstentions from work but in an orderly presentation of their claims before a court. This is the civilized and efficient way of securing one's end, and there is no reason why it should not always be followed. Last week we recorded two decisions in favor of the mine workers. We could not approve of them, but the umpire has spoken, and the operators will comply with them of necessity. There will not be any hesitation. This week we record another decision, this time in favor of a coal company. The grievance that the umpire settles by this decision has been the occasion of much bitterness, and his adjudication is apt to expose him to much criticism —unmerited as that criticism must be. The mine workers want the wage made uniform among the various coal fields. They want a standard wage rate, but they have no more right to try to even it up than the operators have to even it down. The operators could take the lowest rate existing in the region and apply it to all operatives, high and low. But they would be rightly subject to scathing criticism if they did so. Some of that criticism can be applied to the mine workers who want to take the highest rate and make it apply all over the region despite their four-year contract. And now to relate the details. On Sept. 13 Umpire Neil refused to sustain the grievance of the motor runners at the Hazleton Shaft colliery of the Lehigh Valley Coal Co. He declared that when a rate sheet is signed by the mine committee that action is tantamount to an acceptance of the rate by the union, no matter how great may be the dissatisfaction of the men affected. In other words, the mine or grievance committee, under a section of the agreement, is set up as a preliminary court at which such matters are reviewed, and their decision is binding on the men.

The electric locomotive runners contended that the rates paid them at the Hazleton Shaft colliery were not the proper rates for this class of work, and they asked the Conciliation Board to pay the same rate as was being paid on the steam and electric locomotives in and around tributaries of the colliery. There were found to be large differences in the rates of electric locomotive runners working in the neighborhood of the Hazleton Shaft. In one colliery two rates were paid under the 1912 scale to outside electric locomotive runners; namely, 25.3c. per hour and 22.2c. A different rate, 22.1c., was paid to the runner who worked underground.

The umpire states that the proper rate for electric locomotive runners at the Hazleton Shaft was settled when the mine committee, after hearing the complaints of the motormen, accepted the 23.1c. rate and placed it on the rate sheet.

The umpire has given another decision against certain contract miners at the Pyne colliery. They claimed $5.97 for the erection of batteries at the mouths of their rooms. But batteries are only erected where the pitch is so heavy that cars cannot be sent into the chambers. When they are not erected, they should not be paid for. This seemed clear to the umpire and he so ordered. The claim of the miners was based on an agreement made some years ago with Col. R. A. Phillips, then general manager of the company, but the promise to pay contemplated the erection of batteries where the pitch demanded their construction.

Ohio Coal Selling at Sixty Cents

A little unreason can always be endured. A man who makes an exorbitant demand and backs it up with the necessary persistence and is willing to cast away his living recklessly to get what he wants is sure to get it—and pay for it roundly, of course. The miners wanted one company to sell coal to them for far less than cost at the mine. It was only a small matter, though it embodied a big principle. But what is the odds, so long as the miners are willing to spend thousands of dollars in idleness to get a few hundreds of dollars of concession?

The mine workers of the new Pittsburgh Coal Co. went out on strike for free coal deliveries. They were willing to pay $1.25 a ton for the coal, but wanted it hauled and shoveled into their coal shacks without charge. There were 1500 miners idle for this improper purpose, and something had to be done. The company cut the price of coal from $1.25 to 60c. and agreed to haul it for $1. The men consented to this and the strike is at an end.

Illinois Mine Workers in Bad Favor

The strike of the mine workers at Springfield, together doubtless with the strikes in western Kentucky, southeastern Kentucky, Tennessee and Alabama, has displeased the Administration. Especially was the affair at Springfield annoying, because it showed that even when full union conditions are granted the mine workers cannot be trusted to remain at work. They will strike for another scale or for the right to parade, for any or for no reason. The whole story that unity will make for a patient conformity to contract is shown to be a myth, written at headquarters and circulated for the consumption of the public wherever an occasion serves.

The mine workers of the New Pittsburgh Coal Co. went the officials of the union. It was called by a committee from the various locals in the Springfield district. A telegram was sent to the international president, J. P. White, at Indianapolis. It informed him that 18 locals had decided to suspend work "until such time as we are allowed to exercise our constitutional rights."

When the strike occurred, State President J. Farrington was in Washington seeking to secure an increase in wage and trying to explain away as best he could the unfortunate strike of the day hands for more pay than they had agreed to accept in their contract—an agreement which had already once been modified. When the men struck for another cause it was useless to explain that the wage difficulty once settled, peace would result. It was seen that the men were disorderly and would strike regardless of cause.

So Farrington telegraphed back to his lieutenant, Vice President Fishback: "Get the miners back to work as soon as possible. The Government is complaining bitterly about the conduct of our members and our cause is being seriously injured." Fishback took steps to impress upon the mine workers that by their unauthorized strike they were destroying their chances of securing an advance in wages.

President Farrington made a similar statement on his return from Washington. He said that there would be no increase in wage till the present agreement expires. The whole action of the mine workers is one of profiteering. The increase in the price of coal secured by the operators was obtained without conspiracy or a moment's unnecessary idleness, but the mine workers' profiteering has been accompanied by conspiracy, breach of contract and wilful reduction in output. About 1,000,000 tons of coal are still in the ground which industry would have had if the August strike to increase the wages of a few drivers had not taken place. No wonder the Administration is wroth. The profiteering of the operators was as it were thrust on them. At the request, or perhaps rather at the threat, of the Administration the operators deliberately surrendered the advantage that the market gave them. But now the mine workers by conspiracy, in violation of contracts and by restriction of output, are trying to profiteer, and there is no one who can find an excuse for their behavior.

H. C. Adams, the president of the Central Illinois Operators' Association, declared that 99 per cent. of the mine workers were willing to work but were misled by a few. Men who have strong and abiding principles are not so easily misled. It is not sufficient with Governor Lowden to put the blame on a handful who are said to pose as laboring men but are really in league with the country's enemies. The rank and file must lay the burden on their own shoulders when they violate a contract and go on strike. It is pitiable when men do not have gizzard enough to say: "I have given my word and I must make good. The country needs my work and I will perform it." The war is indeed not yet entered into if the mine workers in Illinois have not learned this elementary lesson. They must be lacking in the very rudiments of honesty if they treat their agreements as "scraps of paper."

Union Backs Kentucky Strike

The strike of coal mine workers in southeastern Kentucky and Tennessee has passed its sixth week with little apparent likelihood of a settlement in the immediate future, at least so long as marketing restrictions continue as they are. A largely attended meeting of strikers was held on Sunday, Sept. 16, at Middlesboro, Ky., but the widely heralded settlement did not materialize. There was no communication from the operators, and the miners dispersed after having been assured by Vice President Hayes, of the United Mine Workers Union, that the organization was behind them and that all possible assistance would be given. Efforts of Federal mediators to bring about an adjustment definitely failed during the week past. An increasing shortage of coal, loss of time to both operators and strikers, rapid approach of cold weather and depletion of the strikers' treasury, however, are influences working to force a settlement, and some development in that direction is looked for shortly, according to opinion on all sides.

Meanwhile a serious aspect of the situation is that many of the mine workers are leaving the district and there are predictions that the effect will be felt for months to come. Reports of men returning to work are more numerous. The Wisconsin Steel Co. mines in Harlan County, where the comfort and happiness of the miner has been steadily promoted as a primary aim of the enterprise, continue operations. In Knox County the mines of the North Jellico Coal Co., at Wilton, and the mines of the Carter Coal Co., at Warren and Anchorage, and that of the Jackson Coal Co., at Dean, all on Brush Creek, are running. At Kettle Island it is stated the men were preparing to return to work, but were dissuaded by a committee which gave assurances that funds and other relief would be forthcoming.

In the Drumheller lignite region, along the Red Deer River, in the northwest corner of the Medicine Hat District, Province of Alberta, there has been a strike for higher wages. At Kipp, a town near the McLeod-Medicine Hat line, not far from Lethbridge, there was another strike. Commissioner Armstrong now has both difficulties settled. A contract was signed Sept. 8 and now peace reigns throughout District No. 18, covering Alberta and all points west in the Dominion of Canada, including Vancouver Island.

Editorials

A NEW condition demands a new alignment of ideas, a new viewpoint. We have regarded life as devoted to peace, and so have looked on war industries with some horror and no little disdain. But when the world is at war, no comment on an industry can be more unfavorable than to describe it as a Simon-pure peace industry. If a business has only a peace value, it is a harmful slacker in the national ranks. Fortunately, most industries have a value both in peace and war, but so long as the war continues their status should be evaluated according to their service in the great struggle before us.

* * *

OUR public press caters to the advertisers whose business it is to manufacture "peace" goods—clothing, tobacco, foods, automobiles and similar articles. The interests of the makers of these goods are the interests of our large newspapers. So there is no agitation to reduce the price of these products, nor is there any editorial outcry for the taxing of the profits derived from them. Yet there is just as much revenue-producing value in these industries as in war industries, and, as far as they produce luxuries, taxes upon their profits in reducing their activity would prevent a waste of the national resources in useless folly. We would not put this in a technical journal were it not necessary to say it. Though the newspapers know it full well they keep a discreet silence.

* * *

A COMMON cry of newspaperdom urges us to spend as much as usual so as to save business from a panic. No one now uses the British cry "Business as usual," for the British condemned and discarded it long ago. But it is preserved in a revamped form by the press. The substance remains though the letter is forgotten. Everywhere we are being told that the people should not be thrown out of work; that is, that the stress of war should not be allowed to reorganize industry so as to put men and women in the employments in which they are needed. We cannot conceive how business can be "as usual" when half the gross income of the nation must be saved for the war. Nor can the newspapers explain how such methods can win the struggle, but they prefer either to argue for continuing industry in its old channels or choose to keep silence on this subject of paramount interest.

* * *

WE SHOULD warm up to a war industry as we warm up to a soldier. The soldier has left his trade, has taken up another; he may lose his all, his life, in it. If he survives the war, he must find his way back to his old or another industry. The man who shuts down a peace plant and builds a war plant leaves a known and trodden road for one strange to him; he may lose all he has, the work of years of peace. If his plant survives the war, it must find its way back to its old or to another industry. Why then restrict it to a beggarly 10 per cent. during the war? The manufacturer does not know how long the war will last, nor what will happen to his plant when it is over. To restrict his profits unduly amounts to confiscating his capital. Yet it is more than likely that instead of being praised for his enlistment or willing conscription into war work he will be assailed as a rich and nefarious war profiteer.

* * *

THIS is a remarkable country, the citizens of which congratulate themselves on the rapidity with which they do things. Especially since the war has progress been rapid. It took Great Britain three years to accept what the American people have submitted to in a few months. Very good! Now Balfour says Great Britain is bankrupt and would have collapsed without our help. So why hurry along to join her in that bankruptcy? One may wager that she is by no means certain that her way in the past and in the present was and is the best way imaginable. If the laboring classes had not been profiteers and wanted impossible wages, had prices been allowed to soar and then had heavy taxes on the wealthy been placed without regard to the source of the emolument, there would have been no occasion for bankruptcy. But the workingman did not see it that way nor the rich man either. The workingman wanted high wages and low prices and the rich man didn't want to be taxed uniformly on all forms of industry.

* * *

THIS is a capitalistic war—a war in which the workingman does not understand how important it is for him to help. He will help a little, give his proportion of men, lend a few dollars, but he will not recast his life to win the war. He looks to the capitalist to save this situation. But this the capitalist is quite unable to do, especially if he is fed on "cost-plus" prices. Every man who does not enter the fray should have his money ready to back the Government. A single Liberty Bond paid for in 50 weekly installments may grant a man the right to wear a button but not to call himself a patriot, unless his condition normally is truly pitiable. If the nation does what it says it is going to do, we shall raise $200 a year for every man, woman and child in the United States. As each family consists of five, the bachelors and childless persons will have to give a generous gift or they will not do their proportion toward the $1000 which is demanded from every family in America. And if we are really not going to give $1000 per family, it is time we let ourselves know. Our men and women have got to learn that the old ways won't do, the old customs must go. We must pay our back debts and thenceforward buy nothing that we can do without. We shall have to do things that people "just don't do" if we are going to raise the gigantic sums we roll so glibly off our tongues. We who believed that raising a couple of a billion would

break the British Empire with dependencies on the Seven Seas and that talked of the first million to Belgian Relief as if it were a sum of unapproachable magnitude, now discuss tens of billions of loans and hundreds of millions of donations as if the well could never dry no matter how energetically it is pumped.

* * *

THE wage earner is always telling us how important he is, and he does not overtell it. We cannot win the war without him. We cannot win it even by his work. We need also his savings. The purchases of the workingmen are the mainstay of peaceful industry. Today another business is as big as his; the "business of war" is in line with him at the counter. Unless the workingmen will give him a seat on the stool and let him be served with one-half of the produce, the "business of war" will be starved. Labor is large when crying for its rights, puny when recognizing its duties. But Labor is not both large and puny. It is time it saw itself as it is and recognized the fact that if the war is to be won it is labor that must win it. Labor must live in the dog tent with the soldier and share with him his frugal meal and live with him his noble patrotic life. The workingman cannot be satisfied with flag flying and speech making, with sky rockets and parades. He must enter the war himself and save for the soldier.

May We Look for New Coal Mines?

HOW the buying public seems to stumble into the coal business! It resembles a net into which their unwary feet are always falling. The jobber in time of scarcity and high prices feels he must have a coal mine. The iron and steel manufacturer, the illuminating-gas and electric-light company, the trolley lines and power distributors, the railroad corporations—all want to buy mines when coal is scarce and prices high.

Just now lower prices are converting some whom high prices did not gather in. In an illuminating letter Thomas K. Maher, of Cleveland, Ohio, says: "The tendency [should it be described merely as a tendency?] to control prices by Government agencies will but accelerate the determination of large consumers to own their source of supply because in a free market prices will bring coal, but in a controlled market where all purchasers pay the same price coal will, like kisses, go by favor."

Mr. Maher puts it well, but we do not all pay the same price. Some have contracts, and some coal users have coal mines. So there is little if any coal in the market at the President's prices. All coal is already contracted for and coal is as free as kisses in a community that is well knit together by marital bonds. There are no favors to be obtained anywhere and the man who wants coal must buy it in the ground where competition is still unrestrained by Presidential proclamation and where opportunities are less limited.

So with low prices and with high prices the coal business is cursed with new arrivals. When times are very bad and traffic on the railroads meager, the railroad man looks around and extends his lines into coal territory and opens up mines so as to get traffic to help him meet the stringency of conditions. The industries come into the coal business no matter what the occasion. Like the minister they are always there, be it at a funeral or a marriage.

Ethane Liberated by Ground Coal

ACCORDING to the *Daily Colonist*, of Victoria, B. C., George S. Rice, the chief mining engineer of the United States Bureau of Mines, who examined the Crowsnest coal fields on behalf of the Canadian Government, declares that "an unusual condition has been found in testing the amount and kind of gas given off by the broken coal [from the Crowsnest field], which on the basis of one sample shows (a) that an unusual quantity of hydrocarbon gas is given off by the coal on grinding fine *in vacuo;* (b) that three times as much ethane and other hydrocarbons are given off as methane under these conditions."

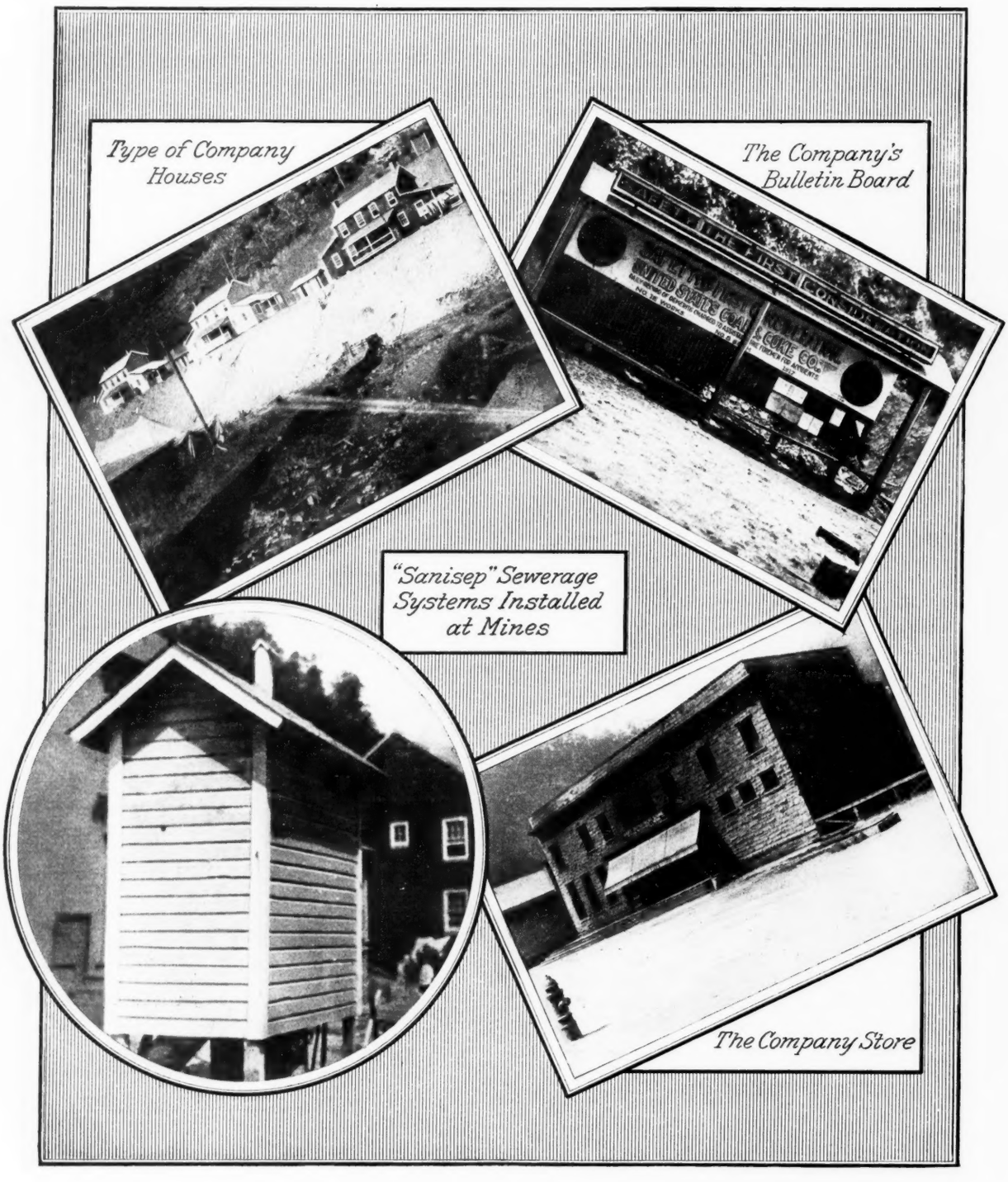
Some time ago G. A. Burrell published his most interesting inquiry into mine gases and suggested that the analyses of gas generated in coal mines that showed the presence of ethane were faulty except in cases where infiltration had occurred, as for instance in West Virginia, from neighboring natural-gas reservoirs.

At that time *Coal Age* stated that it thought the generalization of Mr. Burrell was too broad. It seemed unsafe to assume that in Great Britain, for instance, where petroleum has actually been found on the mine props, ethane would not be emitted into the mine atmosphere. Mr. Burrell's close and extended knowledge of the United States naturally gave him assurance, just as the experience of Dr. Bergius, of Hannover, regarding German coals in another case gave him what we have shown was an excessive confidence in discussing in general the nature of carboniferous deposits.

But it is easy for people to be misled and to regard national or even, for that matter, local conditions as if they are of universal application. If the *Daily Colonist* correctly quotes Mr. Rice, and it doubtless does, ethane is probably common in the Crowsnest district or Mr. Rice's analyst has fallen into a trap in making his analyses, a trap from which Mr. Burrell declared he had only been able to keep free by unusual precautions.

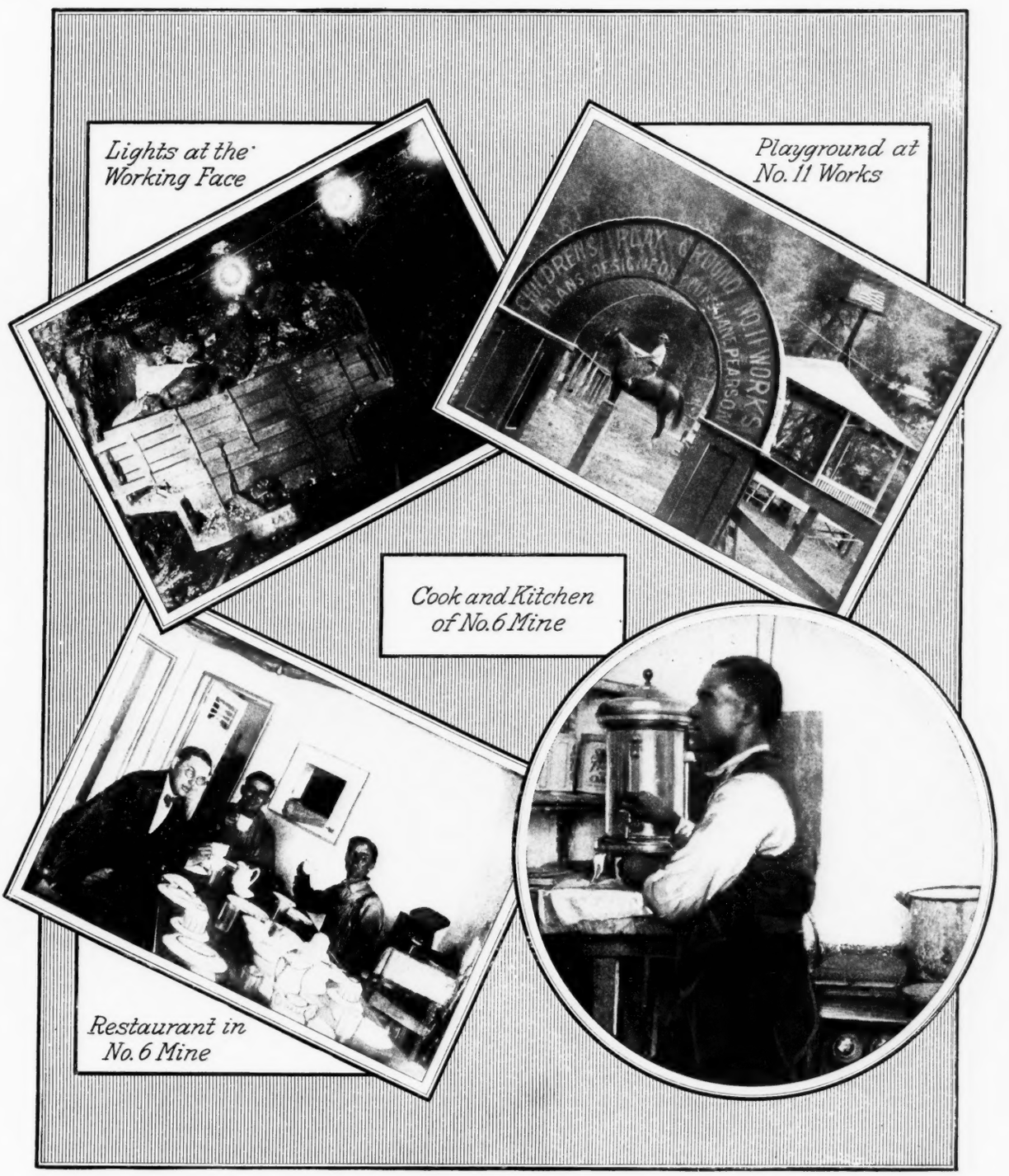
October 13 *is the date on which the annual "Safety, Welfare and First-Aid" number of "Coal Age" will be issued. We intend to make this issue a sort of central switchboard from which we will transmit to every coal-mining development in the country the latest news concerning Safety, Welfare and First Aid. We want articles on these subjects, accompanied by photographs or sketches wherever possible. Manuscripts accepted for publication will be paid for, and should be in our hands not later than October 3. Helping your industry means helping your country.*

INTERESTING VIEWS of the OF GARY



UNITED STATES COAL and COKE CO.

WEST VIRGINIA


Lights at the Working Face
Playground at No. 11 Works
CHILDREN'S PLAY GROUND NO. 11 WORKS
PLANS DESIGNED BY JANE PEARSON
Cook and Kitchen of No. 6 Mine
Restaurant in No. 6 Mine

Discussion by Readers

Artificial Respiration

Letter No. 2—Referring to the inquiry of Joseph Greaves, *Coal Age*, Aug. 11, p. 256, regarding the best method to be employed for resuscitating a person whose breathing has ceased as the result of shock, drowning or asphyxiation, permit me to say that my experience of 15 years in first-aid work in the army and in coal mines impels me to say that he is absolutely correct in his claim that conditions should determine the method to be employed in each particular case.

The two methods of resuscitation, in general use, are known as the Sylvester method and the Schaefer, or prone method, as it is sometimes called.

The Sylvester method, while an excellent one to employ in many cases, could not be used where the patient had received a fracture of either arm. The Schaefer method, while being slightly easier to administer, possesses the additional advantage that the patient is less liable to swallow his tongue. It also obviates the possibility of vomit, which is frequently associated with returning consciousness, and which but for the face being turned downward would choke the windpipe.

I have seen both methods used successfully, however, a number of times and doubtless either can be employed with advantage in different cases. The main thing to remember, in addition to the proper timing of the movement to induce respiration, is persistence in administration. One should not cease his efforts to restore breathing till it is certain life has departed.

NEVER ABANDON HOPE TILL ASSURED LIFE IS EXTINCT

A miner rendered unconscious by electric shock was recently revived by two expert first-aid men, after 1 hour and 40 min. of hard work and in spite of the assertions of the men gathered about that the man was dead and could not be revived. A good rule to follow is, Never give a man up as dead until he is pronounced so by a physician. Life may be present though there is no outward sign manifest.

I have in mind another case of a boy who was under water five minutes, but by persistent use of artificial respiration for an hour and five minutes the lad was revived. So whichever method is employed, do the work faithfully.

Most industrial institutions have, or should have, one or more of the mechanical devices for artificial breathing. I have had experience with both the pulmotor and the lungmotor and can say that there is no question but that they are far superior to any of the methods employed by hand to induce respiration.

These machines, with their accuracy of movement, tongue forceps, and gentle effect on the patient, together with the ease and simplicity with which they can be operated by a first-aid student, constitute an important part of the equipment of any undertaking entailing a hazard to life. The machines possess the additional advantage of using pure oxygen, which accelerates the resuscitation of the person overcome. Altogether, they are ideal for this class of first-aid work, inasmuch as severe fractures do not prevent their use, as is the case with hand methods. Machines admit, also, of the person being kept warm during treatment, while circulation in the system can be assisted by rubbing.

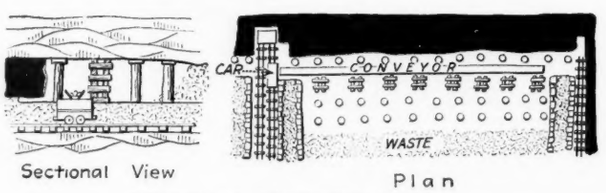
Summit Hill, Penn. ROBERT L. SINYARD.

Mining Thin Coal

Letter No. 1—Referring to the inquiry of H. J. Werder, *Coal Age*, Aug. 25, p. 340, kindly permit me to give a little of my own experience in mining thin seams of coal, in England. These seams were worked by the longwall advancing method, which we described as "working from home." Owing to the difficulty of transporting the coals at the face, the Blackett conveyor was used, and this gave good results.

Judging from the slight information at hand, in respect to the roof conditions of the seam mentioned in Mr. Werder's inquiry, it may be assumed that this coal can be mined most successfully on the longwall plan, which is particularly useful in the working of thin seams where it is necessary to rip the floor or the roof in order to provide sufficient headroom for men and animals traveling on the roads. The material taken from the floor or roof, in this manner, can be used for building the packwalls, which form an important feature of longwall mining.

It will not be necessary to explain, in detail, the use of the Blackett conveyor for handling the coal on a



LONGWALL CONVEYOR FACE

longwall face, as this was fully described not long ago in *Coal Age* (Vol. 7, p. 136.) My experience in the use of this conveyor was gained in the Charlaw colliery, County Durham, England. It had a length of about 100 yd. and consisted of a series of interlocked troughs, 19 in. wide and 10 in. high. The interlocking sections were 6 ft. in length.

The coal was dragged along this trough by a special form of endless chain, which passed over a driving drum at the delivery end of the conveyor and around a similar return drum at the rear end, where there was a screw arrangement for tightening the chain. The return side of the chain was carried on suitable runners that were attached to the underside of the troughs.

The conveyor was electrically operated and sufficiently flexible to permit of its being moved forward

gradually throughout its length, as the working face was advanced. The coal was loaded into the conveyor at any point along its entire length, which avoided the necessity of throwing the coal back to the gate road and so enabled these to be driven at a greater distance apart.

As shown in the accompanying figure, the gate roads were driven a few yards in advance of the conveyor face, and 3 ft. of bottom was taken up on these roads to permit of the cars being run under the end of the conveyor for the purpose of loading. A gate road was made wide enough for laying an empty and a loaded track, and packwalls 15 ft. wide were built on each side of the road. No timbers were permitted to remain in these walls, which were built solid to the roof with slate and filled with rubbish. At the head of the gate road, just beyond the conveyor, there was laid a flat sheet that served for a turntable by which the empty cars were switched to the loaded track and run under the conveyor ready to be loaded.

A return airway was maintained at the other end of the conveyor face, as shown on the right of the figure. The coal within 20 ft. of this airway was loaded out in the ordinary manner on that road and not thrown into the conveyor. This road also served for the supply of timber to the face. At the head of this road, and also on the side of the gate road, just inby from the loading end of the conveyor, a stabling cut is made to hold the machine used for undercutting the coal.

Working a Conveyor Face

In this system, as many loaders as desired can be used for loading the coal onto the belt. When a face of coal has been mined and loaded out on the belt, a new row of timbers is set along the face and the work of moving the conveyor forward is started by withdrawing a few timbers in front of it at the loading end, which is then moved forward. In this manner the entire length of the conveyor is pushed forward in readiness for loading out another cut. As the work advances, the rear timbers are withdrawn to permit the roof to settle on the waste.

It was customary, in the mine where I was employed, to build a row of cribs just behind the conveyor, and these were moved forward as the conveyor was moved. These cribs were made of timbers 4 x 4 in., 2 ft. long, and were only used as an extra precaution to protect the conveyor from a sudden collapse of the roof at any point. As shown in the figure, it was customary to carry at least two rows of timbers behind the cribs. These were termed the "breaking-off timbers."

In respect to the amount of timber required, the longwall method of mining compares favorably with other methods, as the timbers are drawn and used again and the roads are supported by packwalls, which must always be well built. A good plan is to taper the ends of all posts, so that they become burred under the great pressure of the roof. This prevents the breaking of the posts and allows the roof to settle more uniformly and gradually.

A plan that I have employed with success where the roof needed support over the roads is to use long cross-bars and rest these on the packs at each side of the road. The bars are seldom broken but settle down with the packs. The total amount of settlement when the packwalls are well built is about one-half the thickness of the seam. In the method that I have described it is obvious that the roof must be left untouched, the floor being ripped to provide the required headroom on the roads.

William Dickinson.

Oak Hill, W. Va.

Practices in Blasting Coal

Letter No. 8—Referring to Letter No. 6, *Coal Age*, July 28, p. 169, describing different methods of shooting coal under varying conditions, I agree with the writer that no rigid law can be laid down for the blasting of either coal or rock. The position of the holes and location of the charge, in blasting coal, must be determined by the conditions in respect to both the hardness and the cleavage of the coal. A careful study must be made of these conditions to insure the best results. Allow me to give a few practical rules having a general application, which I have found useful in practice. They are the following:

1. Never drill a hole to a greater depth than the coal is mined, as this will locate the charge on the solid and may result in a dangerous shot.

2. When the mining is placed in the bottom of the seam and a shot is located somewhere near the roof, the angle between the hole and the roof should not exceed, say, 15 deg. A greater angle than this causes the charge to have too strong an outthrow, so that the force of the charge is exerted on the face of the coal rather than downward, and the result is the coal is more apt to be shattered and the charge performs less work.

3. When listening for a shot to explode, it is well to remark whether there is a deep boom or whether the explosion produces a shattering sound. The former will generally be found to give the better results.

4. When a shot blows the tamping it is generally due to the charge of powder being insufficient to break the coal, or the depth of tamping is insufficient, or the diameter of the hole is too large for the amount of charge used. A hole should be well tamped, the weight of tamping being twice that of the charge of powder used.

5. Should any coal remain up after a shot has been fired, this can usually be wedged down. It is always important, in blasting coal, to examine the roof carefully for any seams that may appear and to set whatever posts are required for the support of the roof at the face.

C. McManiman.

Rawdon, Que., Canada.

The Carbide Lamp in Mining

Letter No. 1—Kindly permit me to refer to the remarks of William H. Hemelright, *Coal Age*, Aug. 18, p. 292, who criticizes my previous letter and claims that, while the smell of carbide dumped from miners' lamps is not pleasant, it is not injurious.

I am certainly willing to leave this question to our district mine inspector to decide. The inspector's orders to me are to permit no carbide to be dumped on the intake air. His reason must be that the gas given off by the refuse carbide dumped from miners' lamps is either injurious to health or a menace to the

safety of the mine. I hope to see some of the inspectors state their views on this matter.

In regard to the carbide lamp being easily extinguished when riding on a trip, let me say that I have eight men on motors, and not one of them will use a carbide lamp. If I insisted on their doing so, they would quit their work.

In advocating the use of a carbide lamp, Mr. Hemelright suggests that "a little care" on the part of the men will avoid the annoyance due to the smell of the carbide, which they dump from their lamps when putting in a new supply. It may be very true that if miners would take the precaution to cover the carbide with dust or dirt the smell would be prevented; so would many mine explosions be prevented if miners would exercise more care in that direction. We all know that it is the neglect of careless miners to take these precautions that causes the trouble.

Mr. Hemelright also suggests that there is a way by which blackdamp can be detected when using a carbide light, but admits that men must be taught how to do this. I wonder if our friend can find the time, in the present situation when miners are scarce, to educate them and see that they know how to detect the gas when hiring them for work in the mine?

In closing, I want to claim, still, that the carbide lamp is a poor lamp for tripriders to use. To avoid the smoke and grease of an oil lamp, I would much prefer to use a portable electric lamp. JOHN BUGGY.

Chambersville, Penn.

Uncertificated Mine Foremen

Letter No. 8—Holding a certificate as mine foreman from the State of Tennessee, I have been much interested in the discussion relating to the appointment of uncertified men to that position.

As mine foreman, in charge of different mines, I have been asked, at different times, if I held a certificate, and have always been able to answer "Yes." When asked how long a man could act as mine foreman without holding a certificate, my invariable reply has been to refer the questioner to the requirement of the Tennessee Mining Law (sec. 15), which reads: "No coal or other mine shall be operated for a period longer than 30 days without such certificated mine foremen." The law further provides (sec. 18) that "any person who shall act as mine foreman, assistant mine foreman or gas boss, for a period of more than 30 days, without being a holder of a certificate under this act and in accordance with this act, shall be guilty of a misdemeanor and upon conviction shall be fined $100 and costs and imprisoned not less than 60 days, at the discretion of the court."

ENFORCE THE STATE MINING LAWS

In my opinion, every state should enforce its mining laws. When this is done, it will settle the question as to whether an uncertified man can be employed to act as mine foreman, assistant mine foreman or fireboss. Tennessee has a good mining code, and the enforcement of its provisions will be a long step toward making the mines safe, in that state. It is my opinion that the mining law must answer the question in regard to the employment of uncertified men to fill these positions.

I agree fully with the opinion expressed by W. T. Hale, in his letter, *Coal Age*, Sept. 1, p. 380, where he describes the test of a mine foreman's capability. While it is true that a man who is able to pass the examination required in his state may not prove as capable a man, in managing the practical operation of a mine, as one who has had a longer experience though possessing less technical knowledge, yet it must be remembered that the certified man has complied with the requirements of the mining law. In my opinion, no one should be allowed to hold an official position requiring certification, until he has complied with the law in this regard. OSCAR JONES.

Worley, Ky.

Letter No. 9—Considered from a patriotic standpoint, or otherwise, the general employment of uncertified men in positions that the law requires shall be filled by men who have passed the examination and been granted certificates of competency, would unquestionably be an act of injustice to the certified men who have, by hard work and study, qualified themselves for those positions. Not only that, but such a proceeding would be a decided step backward in our progress toward efficiency and safety in coal mining.

This is particularly true in Kentucky, where the mining law is exceedingly liberal in respect to the employment of uncertified men to act as mine foremen or firebosses. The Kentucky law provides (art. 16, sec. 2) that the assistant inspector of mines for the district may, with the approval of the chief inspector, authorize the temporary employment of any miner of four or more years' experience in coal mines who, in his opinion, is competent to act as mine foreman, for a period not exceeding 90 days. The law provides also (art. 15, sec. 1) that the examining board shall hold four regular meetings during the year, on dates not more than three months apart and special meetings when necessary.

MINING LAWS MAKE LIBERAL PROVISIONS

It is readily seen that the Kentucky law is designed to take care of any shortage in available mine foremen. The same is true of the laws of most other mining states. This, together with the fact that there are a large number of certified mine foremen who hold no official positions at the present time, makes it reasonable to assume that there will not be any immediate need for the employment of uncertified men as foremen.

The question, therefore, resolves itself into one that concerns only isolated cases where there may chance to be no available certified men who could be called to assume the duties of mine foreman, in mines where vacancies exist by reason of the war crisis. Should such a condition arise, it would be proper to consider the effect the employment of uncertified men would have on the safety of mines. The natural conclusion is that coal mining, under such conditions, would again become extremely hazardous and fatalities would increase in number.

While there is little doubt that every mine could produce an uncertified man who would be capable of taking charge of the ordinary operations required in mining, at the same time it cannot be denied that the necessary preparation required to pass a mine foreman's examina-

tion will make a practical man more capable of assuming such a charge.

In conclusion, let me say that I believe that any candidate failing to pass the recent mine foreman's examination in Pennsylvania is not thoroughly prepared to take charge of a gaseous mine, from a practical standpoint. That examination was 90 per cent. practical, and a man that failed to pass must know that he needs further training in practical mining and the mining law. G. E. DAUGHERTY.

South Brownsville, Penn.

The Negro, North and South

Letter No. 7—Kindly permit me to offer a few words regarding the exodus of the negro from the South and to state what, according to my observation and experience, are some of the causes for this movement. Having been in the South, now more than 25 years, and having worked with the negro in the North, I feel that I understand some of the difficulties that surround him and can appreciate somewhat his feelings relative to his state and condition.

The present-day negro is much concerned with the betterment of his race. This is particularly true of the better class of negroes, who for some time have been searching to discover places where the conditions would afford them greater opportunities for improvement and progress. In this effort they should receive the united support of all good citizens. Without the aid of the white people, the negro race cannot accomplish its purpose. As a people, they need all the encouragement that can be given them.

INJUSTICE DONE IN MANY WAYS

Most of the negroes who have gone north prefer the South as a place of abode. The reason for their leaving their southern homes is to be found in the unfair treatment that has been accorded them in many districts of the South. The negro worker has often been underpaid for his labor. When employed by a large corporation he is frequently compelled to trade at the commissary and live in a company house, contrary to his choice.

Often, too, the negro has been the victim of "loan sharks," who do not hesitate to fleece him, because of his helplessness. At times, he has been induced to join the industrial insurance companies, who have taken his money but failed to protect his interest, with the result that when taken sick he has found that his policy has suddenly lapsed. It is not my intention or desire to uphold the negro in wrong doing, but simply to claim that he should be accorded equal justice with the white man. That it has been difficult, at times, for a negro to secure a just trial by jury, simply because he is a negro, is a disgrace to our courts.

Were these conditions changed and the South awake to the need of permitting the negro to labor on a fair and equitable basis, the time would soon come that the negro would rejoice to live in the Southland, which is his rightful home. Assisted in his desire and efforts to better his condition, he would render more valuable service in the field, in the mine, or in the factory, and the industries of the South would thrive by his labor, which would increase in value to the employer.

I have said that the negro prefers his home in the South to facing the uncertainties of the North. Only a few days ago I met a negro who left here about eight months ago and found work in Cincinnati. In reply to my surprised inquiry as to why he had come back, he acknowledged that he did well in the North, where he was paid from 25 to 30c. an hour for his work; but he added: "I tell you, boss, this what you call 'social equality' is unnatural to me, and I dun want no more of it. Up there, my wife left me. She got in with the fast set, and I could not stop her, and so we have come back to our old home."

Personally, I am inclined to believe that the Yankee has no love for the negro, but desires him for political reasons, because he can be made to serve his purpose better than the white man. It is not many years ago that there were so many negroes in Pennsylvania that it was difficult for an American miner to secure work in the mines. The same was true in some of the mining districts of the West.

THE NEGRO AS A MINER

The result has been that there are, now, few Scotch, English, Welsh and American miners at work in the mines, as these have been supplanted and have drifted into other occupations. As a miner, my experience is that the negro makes a far better workman than the foreign class of Huns, Slavs and Poles that now flood the mines in the North. For the most part, they are the scum of southern Europe.

The negro has been duped and misled by northern agents who have made all sorts of promises to induce him to go north. The race riots that recently occurred in East St. Louis were caused by negroes being imported into that district in such numbers that many could not find work or even suitable living conditions.

Such a deplorable state of affairs could have been avoided had the law prevented these thieving agents from operating in the South. It would seem that there should be a law that would prohibit the transportation of labor, by irresponsible agents, in such large numbers from one state to another. Without such a law, it is possible that the East St. Louis race riot will be repeated in other places. OLD TIMER.

Maylene, Ala.

Letter No. 8—An opinion that seems to be quite generally accepted by the majority of those who have taken part in this discussion is that the negro is treated right in the North and wrong in the South. Indeed, by a careful study of what has already been written, one would be led to believe, did he not know otherwise, that the negro, or "burr head," as one writer styles him, receives but scant attention from the white people of the South.

It is my desire to present, as far as possible, a wholly unprejudiced opinion, although this may appear difficult for one who has lived in the South during the past five years. To a person who is acquainted with the conditions that surround the negro in the South, it is indeed amusing to note such expressions as, "In the North they [the negroes] are able to build their own homes and have their children educated."

Such a statement displays a regrettable ignorance, on the part of the writer, of the conditions actually exist-

ing in the South with respect to negroes and their families. It may surprise some to know that there are as thrifty negroes in the South as there are in the North, and that the negro schools in the South offer ample opportunity for the education of colored children. In every city, town and mining camp, here, schools are provided for the education of negro children.

Though I have not the figures at hand, statistics will show that there are thousands of negroes in the South who own and occupy homes that stir the envy of many white men. One has but to visit the banks in the South and observe the large number of negroes whose accounts appear on the ledgers of these institutions, to be convinced that the southern negro is not the helpless dependent person that he is thought to be by many in the North. It is only justice to say that the South is proud of what it has done for the negro race.

The Question of Caste

Permit me to say that this whole question is one of caste. Most all races and nationalities, with the one exception of the negro race, are proud of their orgin. The octoroon feels his superiority to the quadroon, and the same gradation, in respect to color, is observed all down the line from the dark-skinned African to the person of mixed blood whose color is fast fading.

The following quotation from "Savoyard," a Washington writer for the *Birmingham News*, expresses so exactly my sentiments that I may be permitted to give it here. By way of explaining the early attachment of a true Southerner's feelings to the negro, he says:

> It is with no satisfaction that I came to the view I hold about this race question. I was raised with negroes, and it is with no little pleasure that I look back to the most sincere and devoted affection that existed between me and my father's slaves. That is a sentiment that a triphammer could not drive into the noggin of your Northerner, who knows nothing about the negro and less than nothing about the Southern white.

In my opinion, the question of uniting two races, between whom there exists as great a difference as between day and night, is an impossible one, at least in respect to social equality. It cannot be done for reasons that are obvious to all.

Birmingham, Ala. SOUTHERNER BY ADOPTION.

Need of Drawing Timber

Letter No. 12—My experience in longwall work covered a period of approximately 15 years, at the following mines in England: Norwood, West Kiveton; Kiveton Park, Waleswood; Grimesthorpe; Holbrook; Cresswell, Monkton, Hartington.

At all of these collieries a fine of 2s. 6d. was imposed on the miner for a single post left in the gob. Occasionally, a miner would leave a post and take his chances. In that event, however, he would make sure that it was not time for the deputy to be around, and work with double speed to get the post covered up so that it could not be reached by the stick that the deputy would push into the gob to ascertain if there was a post left there.

There were generally two men in charge of a stall who were experienced in longwall work and would insist on the miners drawing all back timber so as to produce a uniform settlement of the roof. It was the custom where the seam had a hard roof and floor, to sharpen the end of the post, which would then be furred by the pressure and the post not broken.

Later, iron props were used instead of timber. These were set on a piece of slate that would yield by crushing when the post took the weight. Every three months the iron posts, in each working place, were counted to see that none were lost and, as a result, the miners were more careful to take out the posts than when timber was used. This produced a very uniform settlement of the roof, and avoided the trouble that was caused by an occasional wooden post being left in the gob.

At first it was thought that iron posts would be objectionable, because the miner could not hang his lamp on them, as he was accustomed to do on the wooden posts. This objection was overcome, however, by binding the post with a piece of wire or string, which was slid up or down so that the lamp could be hung on it at any height desired.

In some of the mines it was the custom to build chocks of timber 5 or 6 in. square and 2 ft. long. These chocks were set on a mound of slack to enable them to be withdrawn later and the timber used again. The chocks relieved the great weight resting on the posts and saved much timber.

Features of Successful Longwall Work

Experience in this work has convinced me that the building of good packwalls and withdrawing all timber from the waste is designed to give the best results in longwall work. It is important to use sufficient timber along the working face, building chocks wherever necessary, in order to relieve the crushing strain on the face of the coal.

One feature of successful longwall work is to employ a sufficient number of men to load out the coal before the settlement of the overburden would cause the next fall of coal to take place. In the Norwood and Kiveton collieries, five or six men were employed in loading out the coal from a face 50 to 55 yd. in length. Two of these men would be loading, one breaking up the coal and the other two or three would be mining the next fall to a depth of 5 or 6 ft. Sprags were used to support the coal as it was mined. It was seldom necessary to use what we called "pop shots" to break the coal. The settlement of the overburden usually made this unnecessary.

Trouble was only experienced when a place was not advanced at a uniform rate and the work so arranged that each fall was loaded out as the next fall was mined. When, for any reason, a place lagged behind an unnatural break would occur, causing a heavy and sudden fall of roof to take place, which would greatly impede the work.

In order to avoid this condition, the company employed what were termed "market men," who remained at the bottom of the shaft until they were sent by the deputy to those places that were behind and more workmen were required. By this means, the several places were advanced regularly and uniformly. The market men would work in three or four different places in a single week. JOSEPH A. GREAVES.

Berlin, Penn.

[This letter will close the discussion of "Need of Drawing Timber."—Editor.]

Inquiries of General Interest

Working Pittsburgh No. 8. Coal

We are about to open up a coal tract of 1000 acres, and before proceeding to do this, we would appreciate a discussion relating to the working of the Pittsburgh No. 8 coal, under the conditions that exist in this vicinity, which are as follows:

The No. 8 seam lies, here, at a depth of about 100 ft. below the surface of the valleys, while the heaviest cover, under the hills, is about 500 ft. The coal, in this vicinity, has an average thickness of 5 ft. and is overlaid by a drawslate varying from 10 to 14 in. in thickness. The floor of the seam is shale. Above the drawslate is a thin seam of coal varying from 0 to 4 in. in thickness. This is overlaid with from 8 to 10 ft. of soapstone, above which is from 20 to 30 ft. of limestone.

We have been studying the method of working that has been employed in a neighboring mine, which is opened on the double-entry system. The entries are driven from 8 to 10 ft. in width, with 20-ft. pillars between them. Rooms are turned off the entries, on 30-ft. centers, and driven 24 ft. wide, for a distance of about 200 ft.

What we desire is to ascertain the method of working that will enable us to overcome the difficulties experienced in the mine just mentioned. We find that their greatest difficulty occurs in the summer months, and is due to the roof swelling to such an extent that the timbering ordinarily used in the Pittsburgh No. 8 field is unable to withstand the pressure. While this mine is not considered a wet mine, the cross-timbers become water-logged after being in place for a few months. The wood appears to absorb so much moisture that, in some cases, water drops from the timbers.

Another difficulty experienced in this mine is the heaving of the floor, which has given much trouble. At times the tracks are thrown out of alignment and the headroom decreased so that it is necessary to lift bottom or brush the roof, in order to permit the mules and cars to pass on the roads.

There is little question but the practical readers of *Coal Age* can offer many excellent suggestions that will enable us to adopt a method that will avoid all of these troubles in the operation of the mine, and we hope to see this proposition freely discussed.

Wheeling, W. Va. E. O. CARNEY.

We know that *Coal Age* readers will be glad to give their experience in the working of the Pittsburgh No. 8 and other seams of coal under similar conditions to those mentioned in this inquiry. In describing the best methods for adoption, contributors should always illustrate their ideas with a simple sketch, taking care to explain their methods clearly and in few words.

From the description given of the method employed in the neighboring mine, in this case, there can be little question that the troubles arise mainly from leaving too small pillars for the support of the roof. Twenty-foot pillars, on the main roads, are hardly sufficient when the entries have been driven back under the hills where the cover may reach 500 ft. in thickness. Also, rooms driven on 30-ft. centers and opened to a width of 24 ft. will be separated by pillars but 6 ft. in width, which is much too small for this cover.

It is possible that the trouble due to the presence of moisture will be wholly avoided when a proper system of mining has been adopted, which will prevent the breaking and crevicing of the roof owing to insufficient pillar support on the entries and in the rooms. The heaving of the bottom is due to the same cause and will be wholly avoided by leaving larger pillars.

We hope that good suggestions will be forthcoming from our readers, which will be of benefit to all who are working under similar conditions and experiencing like troubles.

Number of Mine Cars Required

Kindly permit me to refer to the answer given to the inquiry in regard to the number of mine cars that will be required to maintain the continuous and uniform operation of a mine putting out 1600 tons of coal per day of 8 hours, the mine cars having a capacity of 2 tons each, *Coal Age*, Sept. 1, p. 385.

The reply given to this inquiry seems to stop short of the solution of the question asked. Evidently, "Superintendent" wants to know the total number of cars that will be required to operate the mine. In the reply, it is estimated that there will be hauled 10 trips of 24 cars, on each of the two shorter hauls, and 4 trips of 40 cars on each of the two longer hauls. This shows that there would be $2 \times 10 \times 24 = 480$ cars, on the short haul, and $2 \times 4 \times 40 = 320$ cars, on the long haul, making a total of 800 cars hauled daily; but does this answer the question? Kindly explain.

Penn Station, Penn. W. D. HOCKENSMITH.

We are glad our correspondent has drawn attention to the inadvertence in our reply to this question, which as he says is incomplete.

Assuming that each miner loads four cars a day, and a car is standing in each working place, there would be $480 \div 4 = 120$ cars standing in the rooms on the shorter haul; and $320 \div 4 = 80$ cars standing in the rooms on the longer haul. There are also two trips of 24 and 40 cars each, respectively in transit, and two like trips standing on the tipple. This makes the total number of cars required in the mine, on this basis, $2(24 + 40) + 120 + 80 = 328$ cars; and, allowing, say 22 cars idle and laid up for repairs, the total number required for the successful operation of this mine, assuming each miner loads 4 cars a day, would be about 350 cars, which with good management should be ample.

Examination Questions

Miscellaneous Questions

(*Answered by Request*)

Ques.—Give a concise but comprehensive explanation of the following terms: (1) Motive column; (2) equivalent orifice; (3) coefficient of friction; (4) water gage and the constant 5.2; (5) volt; (6) ampere; (7) ohm; (8) watt.

Ans.—1. The term "motive column" describes a column of air, 1 sq.ft. in section, and of such a height that its weight will be equal to the pressure per square foot that the motive column represents. Thus, taking the weight of air as 0.0766 lb. per cu.ft., the height of motive column corresponding to a pressure of 10.4 lb. per sq.ft. is $10.4 \div 0.0766 = 135.76$ feet.

2. The term "equivalent orifice" describes an opening in a thin plate, of such a size that it will offer the same resistance to the passage of air through it as is offered by the mine or the fan to which it refers. In other words, the same air column or pressure will pass the same quantity of air through the fan or mine as through the corresponding equivalent orifice.

3. The expression "coefficient of friction," in ventilation, is the unit resistance of an airway or mine. In other words, it is the resistance offered by 1 sq.ft. of rubbing surface to an air current having a velocity of 1 ft. per min. The value commonly taken in mining practice, is $k = 0.00000001$ (Fairley); or $k = 0.00000002$ (Atkinson, modified).

4. The term "water gage" refers to the water column supported by and corresponding to a given pressure. One inch of water gage corresponds to a pressure of $62.5 \div 12 = 5.2$ lb. per sq.ft., which is the constant used to convert inches of water gage into pressure expressed in pounds per square foot.

5. A "volt" is the unit of measure of electromotive force, or the unit of electrical pressure. The volt corresponds to *pressure* in mine ventilation or *steam pressure* in engine practice.

6. The "ampere" is an electrical unit expressing the strength of a current, or the volume of the flow of electricity. The ampere corresponds to the *quantity* of air flowing in mine ventilation, or the *volume* of water flowing in hydraulics.

7. The "ohm" is the unit of electrical resistance, or the resistance corresponding to a current of 1 amp. and a pressure of 1 volt. The resistance of a current, in ohms, is equal to the electromotive force, in volts, divided by the current flowing, in amperes.

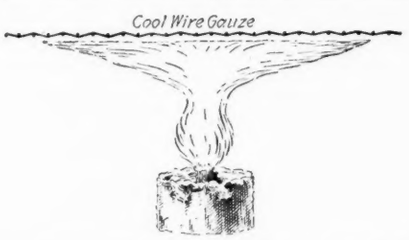
8. The "watt" is the unit of electric power, or the power developed by a current of unit resistance, or a current of 1 amp. flowing under a pressure of 1 volt; 746 watts is equal to 1 horsepower.

Ques.—How far can you drive a pair of entries without the gas being sufficient to show a cap on a safety lamp, assuming an upcast current of 4000 cu.ft. per min., and the coal giving off 1 cu.ft. of firedamp per min., for every 90 ft. of each entry driven? Give the proportion of gas and air in this mixture.

Ans.—In reply to this question, we will assume that a flame cap is first discovered on the safety lamp when 2 per cent. of gas is present in the air current, at the foot of the upcast shaft. This condition will require $0.02 \times 4000 = 80$ cu.ft. of gas per minute, or 1 volume of gas to 50 volumes of air. Then, if 90 ft. of each entry of a pair gives off 1 cu.ft. of gas per min., to produce 80 cu.ft. per min. would require $80 \times 90 = 7200$ ft. of entry. Or a pair of entries could be driven half this distance, or 3600 ft., assuming a uniform and continuous emission of gas for the entire length of entry, which would hardly be realized in practice.

Ques.—(a) Explain the principle discovered by Davy and embodied in the safety lamp. (b) What is the standard size of wire gauze used in the Davy lamp? (c) Name six essential features of a good safety lamp for general work.

Ans.—(a) The principle discovered by Davy and given to the world, Dec. 15, 1815, relating to the property of wire gauze that prevents the transmission of flame while permitting the free passage of air and gas through its mesh, as illustrated in the accompanying



ILLUSTRATING THE EFFECT OF A WIRE GAUZE DEPRESSED ON THE FLAME OF A CANDLE

figure, depends on the fact that as long as the wire remains cool, it reduces the temperature of the burning gas in proximity to it below the point of ignition, so that the flame is extinguished. This effect of the cool wire is greatly assisted by the gas and air being divided into small streamlets, in passing through the mesh of the gauze, and thus more rapidly cooled, whereby the flame is extinguished and prevented from passing through the mesh.

(b) By experimenting with gauzes of different mesh, Davy found that the best results were given by a steel-wire gauze composed of 28 wires (No. 28 B.w.g.) to the inch, which makes 784 openings per square inch of gauze. This mesh was adopted, therefore, and has since been made the standard gauze for safety lamps both in England and in this country.

(c) Six essential features of a good safety lamp for general work are the following: (1) Good illumination; (2) simplicity of construction; (3) protection against strong air current; (4) security of lock fastenings; (5) lightness and portability; (6) strength and durability of parts.

Coal and Coke News

For the Busy Reader

It cannot be denied that the problem of production and supply is one of increasing perplexity to the Fuel Administration in Washington. The wholesale prices of coal have been fixed, and much dissatisfaction is being evinced by soft-coal operators the country over at the prices set for bituminous. The Fuel Administrator's offices at the national capitol present a scene of hustle and bustle these days, and it is nothing unusual to see many of the leading coal operators coming to a Government dictator for orders. Dr. Garfield is reported to be about ready to name coal administrators in each state and citizens' committees in towns and cities to examine local conditions and recommend retail prices. Later an apportionment of the supply is to be undertaken.

* * *

Intimations come from Washington that the President's provisional prices, fixed for bituminous coal, may be increased. It has been found in practice that the effect of the price established has been to curtail production. Fuel conditions were none too good before the recent regulation was put into effect, and many industries are finding it impossible to get sufficient coal for their needs. If it is true that the prices fixed at the mines will not permit of the operation of small mines, it would seem that those prices should be modified in certain instances, as these operations can hardly be allowed to stay idle, so serious is the demand for coal. Whatever is done must be done quickly, or there will be widespread loss and suffering through the Government's interference with economic laws. It is not a time to theorize.

* * *

The continued export of coal to Canada at the expense of the Northwestern states is going to be checked by the Fuel Administration. Dr. Garfield requested the Exports Administrative Board to permit no more coal to be shipped out of the country except under license restrictions, and asked that no licenses be granted unless they are approved by the Fuel Administration. The idea is not to cut off Canadian supplies, but to equalize the distribution of coal and see that the Northwest and Canada both get their fair shares. The Fuel Administration was forced to take this step because complaints had reached it that much of the coal going to the Lakes for shipment had reached Canada instead of the Northwestern states.

* * *

The coal situation in the United States may force a curtailment of exports to other countries besides Canada. The Government, at the present time, is considering cutting off coal that is going to German-owned public utility concerns in South America. The State Department suspects these utilities of furnishing much of the money that is being spent for propaganda on the North and South American continents.

* * *

It is said that coal operators and dealers in two or three sections are violating President Wilson's coal-price orders. Violations in Ohio are declared "most serious," according to reports to the Fuel Administration, and Federal investigation is now under way. The violations, it is rumored, are taking several forms. One is refusal to sell at the Government's prices. Another is selling at higher figures after secret "gentlemen's agreements" over the telephone. A third is the claim that there is no coal available not previously contracted for. If these violations are not stopped, it is said the full power of the Pomerene coal amendment to the food-control law will be invoked. This would mean punishment by $5000 fine and two years' imprisonment for each separate offense.

* * *

From the West comes the news that Colorado coal operators have promised Mayor Speer, of Denver, to supply coal at cost. This would appear to be going the President's prices one better, but we hasten to add that the amount of coal to be so furnished is limited and will be supplied only in the event that the city's shipments of coal from its own mines will not be sufficient to meet demands. Municipal coal is to be sold at cost to persons of limited means.

* * *

A national coal conservation campaign is now under way, and the best method of tending a furnace, banking a fire at night and conserving the fuel supply generally will be taught every household as well as every apartment janitor and skyscraper fireman. It may perhaps strike some of our readers who live in apartment houses that janitors need no lessons in the conservation of fuel, especially on a cold, blustery day in the dead of winter.

* * *

Cut out the booze in Ohio, Illinois and western Pennsylvania, says J. D. Morrow, of the Pittsburgh Coal Producers' Association, and the result will be an increase of 25,000,000 tons a year in the coal production. Of course, his figures are only estimates at best, but nobody familiar with the facts will be inclined to dispute the handicap of liquor to efficiency in mining, as in other labor. The slogan should be, "Out with the liquor" instead of "Down with it!"

* * *

A loud cry for help is heard from Ohio cities. Manufacturers in that state say that if the coal priority-shipment order relative to the movement of coal into the Northwest is not modified so as to afford relief, plants will have to shut down and many cities in the state will be in total darkness for want of electricity. All the coal mined is being sent to the Lakes for transportation to the north and Ohio consumers are not getting any fuel. The cries have already been heard in Washington and relief is promised.

* * *

Germany having shut off shipments of coal to Holland in an effort to squeeze a large loan out of the Holland bankers, England now informs the Holland Government that she will supply it with 150,000 tons of coal if that much is needed. Another move of Germany checkmated!

Harrisburg, Penn.

Petitions to President Wilson to order a revision of anthracite prices, as recently set by the Government, are being signed by thousands of persons throughout the hard coal region, and the work is being taken up by many organizations. The petitioners declare the rise of $1 a ton in pea coal, which in this section was the result of the Government fixing a price for this size greatly in advance of any ever paid in the anthracite field, is revolutionary in character, and will result in great disturbance of business, particularly with manufacturers.

Those having charge of the agitation believe the president is unaware of the manner in which the Government's price-fixing has affected the price of pea coal, and are confident he will order a revision.

Some very interesting sidelights have been thrown on the retail coal situation in some of the larger cities of the eastern part of the state by a report of the Federal Trade Commission. Recently dealers declared that "they wished they were making 50c. a ton profit." This week prices were jumped, and an appeal was made to Dr. H. A. Garfield, national coal administrator. The report of the commission then followed.

According to the report of the commission, dealers have been realizing a profit of from 58c. to $1.23 a ton, since last April, despite the claims of the dealers that their profits have never reached 50c. The report does not cover pea coal, on which the largest advance was made, and on which the biggest complaint is registered. In Philadelphia dealers claimed their costs of hauling averages $1.24 a ton.

The statement of the Federal Trade Commission is considered significant in that it takes into account the possibility of a shortage in the supply of coal from the railroad-controlled mines. Dealers explained the increase in price by saying that they were required to buy largely from the independent operators who are permitted to charge an excess of 75c. a ton over the price of the large operators. Shortage of supplies was given as another reason.

In face of insistent statements from retail coal dealers that supplies of anthracite are insufficient, the hard coal operators, through the Anthracite Bureau of Information in Wilkes-Barre, issue official figures to show that the hard coal output for August reached the total of 7,013,996 tons, the largest amount for any one month in the history of the industry with the exception of June this year, when the total reached was 35,041 tons higher.

This showing is remarkable in view of the difficulty mines have had to contend with in the way of labor shortage, and it bears out the statement made by a leading operator last May that with the exception of the vexatious button strikes the men in hard coal mines were more than doing their bit.

Railroads in the Pittsburgh district are said to be marking time pending the determination of the complaint of certain small operators of coal mines that the carriers decline to furnish them with open top cars into which to load their output from wagons. The complaint alleges discrimination, in that other shippers of coal who load from tipples are supplied with equipment of this type mentioned, affording them preference with the trade, which will not accept coal loaded into box-cars. Upon their part, the railroads are not disputing the complainants' contention, but are proceeding along the lines laid down by the authorities at Washington under the so-styled "priority act," and are shutting their open top cars with all the expedition possible between mines equipped with tipples and Lake Erie ports loaded with coal for transportation to the Northwest. Nor do they pretend, it is stated, to endeavor to accommodate the complainants who, they insist, use car equipment wastefully and deprive other shippers possessing tipples of the use of cars that could be employed to good advantage in reducing the fuel shortage by more expeditious loading. The railroads justify their refusal to place operators of these small out-of-the-way mines, known as "wagon mines" or "snowbird mines" on a parity with those operating big mines regularly and loading from tipples, upon the ground of the greatest good to the greatest number. It is understood, however, that these small operators intend appealing to the State Public Service Commission, in which event the issue will be raised immediately between the State and Federal Governments.

The exchange organized by the coal operators of the Pittsburgh district, at the instance of the railroads operating to Lake Erie, is apparently overcoming the obstacles to getting coal to the Northwest. Before it came into existence the carriers had gone as far as they could to induce the movement of Lake cargo coal without subjecting themselves to suit for damages. They agreed among themselves that hooper-bottom, self-cleaning cars should be kept on their own rails, and induced coal operators to agree to ship not less than 50 per cent. of their output to Lake ports and vessel owners to pool their issues so as to prevent detention of either cars or boats at Lake Erie docks. It is stated that in so doing they transgressed the anti-trust laws flagrantly, but in a good cause and only to meet an emergency. Now, however, they are protected by the "priority act," designed to make it impossible for shippers of coal other than Lake cargo to maintain suits in court to collect damages from them for having given preference to the latter. Upon this point the carriers of the Pittsburgh district are relying in their controversy with the small operators.

Chaotic conditions prevail in the coal trade in the soft-coal region as a result of what many operators declare to be an abortive attempt on the part of the Government to regulate the industry. With scores of "wagon mines" forced out of business by the fixed price of $2 a ton at the mines, and regular producers centering their efforts toward filling contracts which call for a higher price than that fixed by the President, observers declare it is probably a

matter of days only until many industries, big and small, are forced to close down on account of fuel shortage.

It is difficult to find a coal operator, or any one else familiar with the soft coal industry, who believes the $2 price will stand. Operators assert that only in event the Government is determined to make a show of authority will that price be persisted in. If the coal trade is to be dealt with in a spirit of fairness and equity, these men assert, there will be an early price adjustment.

Although the Government price of $2 a net ton for run-of-mine coal was never regarded as adequate compensation for the operator in general, even those who were inclined to make the best of it are rapidly losing heart.

Bituminous operators admit that the anthracite trade is generally prosperous at all times. It does not have the competition that prevails in bituminous coal fields when production is normal, and, above all else, anthracite operators are generally large corporations. The bituminous coal operator figures that the anthracite operators and the farmer with his $2 wheat are both being well taken care of.

Because of reduced operating costs in regions where the coal seams are close to the surface, small concerns have been able to hold their own in the bituminous coal fields. Small operators are among those hardest hit by the $2 price.

Those in the trade who rigidly adhered to the Lane-Peabody agreement by selling their output at the agreed price of $3 a ton contend they should have had some protection. It is not denied that $3 a ton yields a fair profit and in some cases a rather attractive one. On the other hand, $2 a ton is below actual cost to a large percentage of mines.

While it is realized that Dr. Garfield cannot be expected to accomplish everything at once, there is a feeling in many quarters that Washington has not appreciated the seriousness of the situation. There has been a shortage of coal, and that shortage still exists. It is more acute by virtue of the fact that spot coal in the Connellsville region has virtually disappeared from the market. Some steps must be taken immediately to remedy the situation, or many plants will be forced to suspend.

The Public Service Commission's bureau of rates and tariff on Sept. 15 issued the following notice:

"As an aid to relieve the difficulties at the bituminous coal mines caused by insufficient cars for shipment being available, the Public Service Commission has granted the coal-carrying roads authority to amend the 'car-distribution rules,' effective immediately, to permit the assignment of box-cars to mines regardless of the number of coal-carrying cars supplied, and not to be charged in the distribution.

"This practice will be carried out only for west bound shipments of coal and is designed to make use of box-cars which are now moving west empty for the grain movement east, which is very heavy at this time of the year. It will also enable the coal operators to increase the output of coal, which will relieve not only the markets in the West, but will also have a beneficial influence on coal supplied in the East in that it will conserve coal-carrying cars on this traffic, which might otherwise be necessary for coal moving in other directions."

The State Insurance Fund managers have decided to insure the coal mine catastrophe hazard of the State Workmen's Insurance fund in the American Reinsurance Co., an American concern, up to $250,000. The insurance had been carried in the British Lloyds.

PENNSYLVANIA

Anthracite

Beaver Brook—George Drum was awarded the $50 Liberty bond for the month of August, under the system of the C. M. Dodson Coal Co., which makes this reward to the man with the record for the steadiest work during each month.

Freeland—The Lehigh Valley Coal Co. is still pushing the crusade to stop the practice of coal stealing from the banks about its collieries in this region. The Hazle mines are the scenes of most of the robbing. The coal company officers are now conducting investigations and many arrests are predicted. It is estimated that thousands of tons of coal have been stolen from the company during the past few years.

Coleraine—Superintendent John H. Harvey, of the mines of the A. S. Vanwickle estate, has announced that the company will not appeal to the district draft board for the exemption of any of its employees who are included in the first draft quota. This is a patriotic move on the part of the company and reflects the spirit that has dominated Mr. Harvey's action in serving as a member of the local district draft board. It is estimated that the number of men affected is 25.

Johnstown—Arthur F. Payne, director of the vocational training schools, has announced that schools for coal miners, electricians, etc., are to be established here this winter. These schools will conduct their sessions in the evenings.

Lilly—Officials of the Bird Coal Co. have announced that a contract has just been closed with Eastern buyers whereby all the coal the concern can mine for the next 12 months will be purchased. This means, the local operators say, that the mines will operate every day.

Lansford—It has been announced that the Lehigh Coal and Navigation Co. will not press claims for its men before the district board, on account of the small number of employees affected.

Wilkes-Barre—The Lehigh Valley Coal Co. has installed a large steam shovel to be used at the company's culm banks at Drifton, near Wilkes-Barre. The culm will then be prepared for market. The company has taken this step in order to conserve the coal supply.

Centralia—The Lehigh Valley Coal Co. has established a local hospital for the care of its employees that are injured while on duty. Dr. Frank Marshall, of Ashland, Penn., is in charge.

Hazleton—The A. S. Van Wickle Co., operating the Coleraine mines, is driving a new slope through which coal will be taken out from smaller veins. It is anticipated that the tonnage will be greatly increased.

WEST VIRGINIA

Fairmont—The Antler Coal Co. recently closed negotiations for 189 acres of No. 5 block gas coal. This property is situated at Grove, in Clay County. The company intends to open two mines on this tract within the next sixty days. These mines are to be drift operations and are expected to have a capacity of 1000 tons a day.

OHIO

Columbus—Under the supervision of the Federal coal dictator, plans have been made by which it is expected that the threatened coal shortage in Ohio will be relieved. Attorney-General McGhee has announced. Mr. McGhee and Chief Inspector James B. Dugan, of the Utilities Commission, have returned from Washington where they were in conference with Dr. H. A. Garfield.

A coal dictator has been appointed by Governor Cox, but his name is withheld for the present. The dictator will have representatives in each city in Ohio as well as in the counties. It will be their duty to keep the dictator informed of coal conditions in their districts. According to recent announcements operators and retailers will be compelled to charge the fixed prices and there will be no gouging of consumers.

ILLINOIS

Carlinville—S. M. Duggan, of Girard, has been chosen County Mine Inspector of Macoupin County. Other applicants were Phil Davis, William Bailey, H. C. Knemoeller, N. Farnsworth and Alex Gray.

Belleville—There were 1025 more men employed in the mines of St. Clair County during the fiscal year ending June 30 than during the preceding fiscal year. The number employed in 1916-1917, according to the annual report of County Mine Inspector Anthony F. Jakoubek, was 5078. In the preceding year 4053 were employed.

O'Fallon—The O'Fallon Coal Co. has begun sinking a shaft beside the Baltimore & Ohio track on the edge of O'Fallon. The company has a capital stock of $100,000. The incorporators are Edward C. Hargrave, 749 shares; William Knapp, 250 shares, and Oscar Pyle, one share.

East St. Louis—After trying for several weeks, City Comptroller Kelley obtained a bid the other day for furnishing fuel for the City Hall, police department, fire-engine houses and other city purposes. Frank A. Maule offered to deliver mine-run at $3.15 a ton. Although the city paid only $1.75 last year, the contract was given to Maule at his price. The School Board recently let a contract at $3.25, against $1.69 last year.

Duquoin—Employees of the Security Mine, owned by the Rutledge & Taylor Coal Co., of St. Louis, have contributed $400 to the Red Cross. The Security miners also bought a $1000 Liberty Bond and gave $100 to the Duquoin Children's Home.

MISSOURI

St. Louis—The Western Fuel Distributers' Association has been organized here with the following officers: Edward Devoy, president; Charles J. Maguire, vice president; E. J. Wallace, secretary and H. S. Graves, treasurer. The object of the association is to protect the coal industry in the Middle West and see that the consumer and the public will not be imposed upon and to assist the Government and the different states for the securing of data that will put the coal business on a profitable basis and assist and help to better conditions in critical times.

OKLAHOMA

McAlester—Forty-six men recently took the examination at McAlester, under the direction of the State Mine Inspector, for mine officials. This is the largest class of applicants that has been examined at one time in this district. The list included twelve firebosses, eleven pitbosses and one superintendent.

Foreign News

Amsterdam, Holland—"The Telegraaf" learns that Germany has stopped supplying Holland with coal, probably due to the refusal of Holland to give Germany further credit.

Vancouver, B. C.—According to W. H. Armstrong, Government director of coal-mine operations in District No. 18, conditions are improving rapidly in the district. The present coal output already exceeds the production of this time last year, although full capacity has not yet been reached. The daily output is now about 22,000 tons from approximately 29 mines. The district comprises part of the southern portion of Alberta and the southeastern section of British Columbia, including the Crow's Nest district.

Personals

W. H. Hunt, of the West Kentucky Coal Co., has been made general manager of the Panama Coal Co., of Robardo, Kentucky.

Van L. Griffiths, of Marion County, West Virginia, was recently named district mine inspector for the third mining district of the State of West Virginia to succeed Frank E. Parsons, resigned.

H. J. Richardson has been appointed works engineer for the Berger Manufacturing Co., Canton, Ohio. His new work includes the power plant, new constructions, maintenance and repair of manufacturing equipment and buildings.

Leo C. Gibson, chief engineer with the Latrobe-Connellsville Coal and Coke Co., has resigned from the company to embark in business for himself as a civil and mining engineer, with offices in the First National Bank Building, Latrobe, Pennsylvania.

Thomas Branch, foreman of the Naomi mine of the United Coal Corporation, near Belle Vernon, Penn., has succeeded to the position of superintendent vice Joseph C. Trevenow, who has been appointed mine inspector of the corporation, as mentioned elsewhere in these columns.

Charles E. Reynolds, of Irwin, Penn., has resigned as mine inspector for the United Coal Corporation and subsidiary companies to accept a position as superintendent with the McLean Mining Co., of Washington, Penn., which operates mines near Meadowlands, in Washington County.

Joseph C. Trevenow has succeeded Charles E. Reynolds as mine inspector for the United Coal Corporation. Mr. Trevenow was formerly superintendent of the Naomi mine of the Naomi Coal Co., a subsidiary of the United Coal Corporation at Naomi, near Belle Vernon, Fayette County, Pennsylvania.

George McCall was elected vice president of the Westmoreland Coal Co., of Philadelphia, Penn., at a recent meeting of the Board of Directors of the company. **Herman Roll** was made treasurer and **Howard R. Yearsley** secretary of the Westmoreland Coal Co., Penn Gas Coal Co. and Manor Gas Coal Co. **George B. Seyms** was appointed manager of sales of each of the foregoing companies.

George O'Brien and **T. H. Williams,** district mine inspectors for the Provincial Department of Mines, stationed at Fernie, Crowsnest district of British Columbia,

have resigned. Mr. O'Brien is now manager of one of the mines of the Canadian Collieries (Dunsmuir), Limited, Comox colliery, Vancouver Island, and Mr. Williams is superintendent of the Crow's Nest Pass Coal Co.'s Michel colliery, in Southeast Kootenay, B. C. **William Lancaster** has been appointed a district mine inspector, and **R. Strachan** has been transferred from Merritt, Nicola Valley district, these two taking the places at Fernie of Messrs. O'Brien and Williams.

Obituary

E. D. Gregory, auditor of the Philadelphia & Reading Coal and Iron Co., Pottsville, Penn., died recently at the age of 55 years. He is survived by his widow and three children.

Frederick H. Walsh, of Brantford, Ont., for 30 years in business as a coal merchant, died on Sept. 10, at the age of 69 years. He is survived by two sons, one of whom, Percy, was associated with his father in the business.

John R. Edgar, aged 65, died at his home in Forty Fort, Penn., recently after being ill for eleven weeks of dropsy and complications followed with paralysis of the heart. Mr. Edgar had been connected with the Susquehanna Coal Co. for 47 years, and at the time of his death was general paymaster. He was a member of the Westmoreland Club. He was an active member of St. Stephen's Episcopal Church.

Patrick Gilday, the first chief of the State Bureau of Mediation of Pennsylvania, died on Sept. 14 in a hospital at Clearfield, according to a message received at Harrisburg by Dr. John Price Jackson, State Commissioner of Labor and Industry. Mr. Gilday, who was about 55 years of age, was long identified with the United Mine Workers, being president of the Central Pennsylvania District. He was for a time connected with the Federal Government Mediation service.

Industrial News

Pitcairn, Penn.—By Oct. 1 the Pennsylvania R.R. expects to have completed a $100,000 coaling station for its locomotives at Pitcairn. The bunkers from which the engines will take on their fuel supply will have 1200 tons capacity.

Milwaukee, Wis.—The Milwaukee Electric Railway and Light Co. recently placed with the Locomotive Pulverized Fuel Co., 30 Church St., New York City, a contract to equip 2500 hp. of boilers at its Oneida St. plant with apparatus for the burning of pulverized coal.

Columbus, Ohio — Charging that the Hocking Valley R.R. overcharged them for coal hauling to the amount of $57,274, the New Pittsburgh Coal Co., through its attorneys, A. M. Calland and Morton, Turner Irvine & Blanchard, has filed suit in Franklin County courts to recover the amount.

Johnstown, Penn.—A deal was recently closed whereby the Conemaugh Smokeless Coal Co. purchased back the big coal plant at Robindale, which it sold some time ago to E. F. Saxman, of Philadelphia. The consideration was in the neighborhood of $200,000. Extensive improvements are to be made at the plant.

Raton, New Mexico—The coal mines, formerly operated by the Yankee Fuel Co., are now being operated by the Superior Coal Co., which is opening the property. The original Yankee seam has been reopened and development work has advanced to a point where a steady production will be available as soon as hauling and loading facilities are ready.

Knoxville, Tenn.—United States Coal and Coke Co., a subsidiary of the United States Steel Corporation, will invest from $10,000,000 to $12,000,000 in the development and operation of virgin coal fields in Harlan County, Ky. A daily output of 250 cars is anticipated. Seventeen mines will be opened, all of which will be in full operation by the end of another year.

St. Louis, Mo.—John F. Queeny, president of the Monsanto Chemical Co., 1800 South Second St., announces that the company will erect a $1,000,000 plant for the manufacture of coal-tar products on the east side of the Mississippi River, a mile south of the municipal bridge. A site of 85 acres has been purchased. Ten acres will be devoted to dock facilities.

Leechburg, Penn.—The Gladys Coal Co., recently organized to add to the coal production of the Kiskiminetas Valley, has opened a mine from which shipments are now being made. It is the intention to operate by electric machine mining and motor haulage when work is completed on a new track being installed from the Conemaugh division of the Pennsylvania Railroad.

Frankfort, Ky.—The Ohio Valley Coal Operators' Association, representing mine operators in western Kentucky, has filed a complaint with the State Railroad Commission against the Louisville & Nashville and the Illinois Central, relating principally to rates on coal to Louisville and beyond. It is complained that the rates in effect, increased by 10 to 15c. on the ton in June, are extortionate.

Ashland, Ky.—The King Elkhorn Coal Co. has been incorporated with a capital of $10,000 to operate mines on the left fork of Beaver Creek, Floyd County, on the Long Fork branch of the Baltimore & Ohio R.R. The officers are: J. E. King, president and treasurer; Thomas B. Powell, vice president and general manager; H. R. Dysard, secretary. The main office of the company is at Ashland, Ky.

Washington, D. C.—In conducting its investigation into the retail coal situation in Pawtucket, R. I., Goshen, N. Y., and Rockford, Ill., the Federal Trade Commission concluded that in the first city mentioned retailers received "gross margins" that "could only be characterized as extortionate." In Goshen the gross margins were considered reasonable, while in Rockford a gross margin of 20c. per ton in excess of a "fair" margin was obtained.

Denver, Colo.—To meet any possible coal shortage in the West next winter, more extensive use of fuel wood from the national forests is urged by the Government's foresters. The supervisors of the 153 national forests will afford all possible facilities to local residents wishing to obtain cordwood, which settlers may obtain free for their home use, and which is sold at low rates to persons cutting and hauling in order to sell to others.

Toledo, Ohio—Activities at the Toledo docks have been marked during the week ending Sept. 14. The Hocking Valley docks loaded 212,000 tons as compared with 179,000 tons the previous week. The Hocking Valley docks during the present season have loaded 2,975,016 tons. The Toledo and Ohio Central docks loaded 106,000 tons as compared with 101,000 tons the previous week. The total handled by these docks since the opening of navigation is 1,409,023 tons.

Parkersburg, W. Va.—The Hartford City Salt Co., of Hartford City, W. Va., is disposing of its coal lands and other properties to the Hartford Salt and Chemical Co., a new corporation, which will operate all of the properties. The consideration in the deal is said to be about $500,000, and 5000 acres of land are involved, of which 1000 are coal land, located on the Ohio River. One mine, with a daily capacity of 200 cars, is already in operation. A. D. Williams, state road commissioner, is president of the new company.

Cleveland, Ohio — The Fulton-Kenova Mine Car Co. is the new name of the Fulton Pit Car and Manufacturing Co. of Canal-Fulton, Ohio. The general offices of the new organization are now located at 1035 Guardian Building, Cleveland, Ohio, with works at Canal Fulton, Ohio, and Kenova, W. Va. The officers of the company are: C. K. Myers, president and manager; W. D. Somers, treasurer and secretary; Don Miller, vice president. The directors are: N. T. Jones, T. J. Moffett, W. D. Somers, C. K. Myers, W. T. Greene, T. J. Bailey and Don Miller.

Louisville, Ky.—Voluntary increases in property assessments amounting to from 75 to 100 per cent. over the assessments of last year should be turned in by the mine owners of Kentucky, according to a statement made at a meeting of the Kentucky Mine Owners' Association in Louisville recently by M. M. Logan, chairman of the Kentucky Tax Commission. About seventy-five of the leading operators of the state were in attendance at the meeting, presided over by President Frank D. Rash, of Earlington, Ky.

Louisville, Ky.—The Kentucky Railroad Commission sat at the Seelbach Hotel on Wednesday, Sept. 19, to hear the application of the Louisville & Nashville R.R. for permission to increase its freight rates on coal 15 per cent., with a maximum of 15c. a ton. The increases would apply to coal hauled between North Jellico and Taylorton, the Beattyville district and Versailles; from mines on the Henderson division and branches to Hopkinsville, and from Owensboro division mines to Russellville and Logan County.

Louisville, Ky.—The Consumers Fuel and Supplies Co., recently incorporated in Louisville with capital of $8000, has amended its charter to issue $192,000 of preferred stock and has announced that it will purchase two Kentucky coal operations. It is proposed to buy one in the Western part of the state and the other in the Eastern section, so as to have both kinds of coal available, and to establish a coal yard in Louisville. Walter S. Adams, a real estate man of the city, has been elected president and Samuel S. Dalrymple, secretary.

St. Louis, Mo.—St. Louis coal dealers have received from the Federal Trade Commission in Washington blank forms on which they are directed to submit statistics on prices of coal sold to consumers in August, 1916, and August, 1917, and give the amount and varieties of coal that they handle. The blanks are to be returned to Washington before Sept. 25. A penalty of $100 per day for each day's delay after that will be inflicted. For false statements there will be a fine of $1000 to $5000 and imprisonment for three years may be inflicted. The information is to be used in fixing the retail coal price.

Salt Lake City, Utah—The Independent Coal and Coke Co. announces the abolition of its sales department, its entire output to be taken over in the future by the Aberdeen Coal Co. William Gorton, a member of the National Fuel Board, formerly sales manager for the Independent company, is to be general manager of the new concern. In a schedule made public by the Aberdeen company bearing the signature of Mr. Gorton, advantage is taken of the President's provision that jobbing concerns are to be allowed 15c. a ton for handling coal and all prices quoted are 15c. above those fixed at the mines in the President's order.

St. Louis, Mo.—The Jewell Coal and Mining Co. has been incorporated to conduct a coal mining business. Capital stock, fully paid, is $15,000. The company has 500 acres near Duquoin, Ill., where it has sunk one shaft and is sinking another. Mr. Poepperling is sales manager of the John T. Hesser Coal Co. and Mr. Layton is secretary of that company, but the new enterprise is not connected with the Hesser company.

Columbus, Ohio—Stating that emergency coal ordered shipped by the state clearing house to keep traction lines running for milk haulage and to supply light and power to communities had been neglected by the Baltimore & Ohio R.R., John M. Roan, director of the state clearing house, last week wired Fred C. Cruxton, vice chairman of the Ohio Council of Defense, at Washington, to carry the complaint to Dr. H. A. Garfield. The original complaint was made by T. K. Maher, Cleveland, who said the Baltimore & Ohio refused to haul coal from Flushing, Belmont County, to supply the Ohio State Power Co., at Davidson; the Cleveland Southwestern & Columbus Ry., Elyria, and the Central Power Co., Canton.

St. Louis, Mo.—The Purchasing Agents' Association of St. Louis, composed of 50 men who do the coal purchasing for the large industries, has started an investigation to find out if coal companies are withholding coal which they are required under contracts to deliver at low prices and selling it on the market at the higher price that has been fixed by the Government. Large manufacturers who made coal contracts last spring are alarmed over the small quantities of coal they are getting and have received reports that the slow deliveries are not so much due to car shortage as to anxiety of coal men to deliver where they can get higher prices. A committee will report at the next meeting of the purchasing agents' organization.

Seattle, Wash.—Dr. Henry Suzzalo, chairman of the State Council of Defense, after conferences with consumers, dealers and producers of coal, sent the following telegram recently to Coal Administrator Garfield: "In the face of a very probable fuel shortage, three things were recommended to the Federal Government. First, that no action should be taken without a careful and detailed investigation of the facts in the case. Second, that any policy which the administration might pursue should look carefully to the protection of the public, so as to mitigate suffering and not to cripple industry. A price should be set which shall be fair both to the public and the operators. Third, that price control in the Northwest should not be made with reference to single sections, but should be made covering the entire district."

Market Department

GENERAL REVIEW

Anthracite production and distribution slightly above normal. Bituminous situation rapidly approaching a critical stage. The past month has been one of stagnation and uncertainty throughout the entire country.

Anthracite—The trade in anthracite has moved along during the past week in about the same manner as in the week preceding. The requisitioning of tugs formerly employed in the New England trade has had the effect of slightly decreasing shipments by water to that territory. The proposal to place all tugs and barges under a centralized management did not meet with favor among the shipping interests, and the plan if not definitely abandoned is at least held in a status quo. All-rail shipments to Eastern and Western territory continue in large volume, but fewer "solid trains" have arrived in New England. Lake shipments of anthracite have been heavy.

Bituminous—The bituminous trade is confused and almost paralyzed. Ever since the price fixing by the Government, quotations on the $2 basis have been made, but practically no sales have been consummated. Dealers and large consumers, whose needs were not covered by contracts made prior to price fixation have been unable to secure anywhere near the amount of coal they needed. Dealers in particular who are dependent on spot supplies are practically out of business. Municipal and industrial-plant officials throughout the entire country have in many instances experienced great difficulty in keeping their plants in operation. The City of Boston, for instance, has had to secure coal from a private consumer at a high price in order to keep some of its municipal plants working. At the other extreme of the country, on the North Pacific coast, one of the states, unable to get coal for its public institution, has made arrangements to secure stump acreage and cut firewood therefrom by convict labor. While it is quite true that some sales have been made at the prices fixed a month ago, the volume of business thus transacted has been so small as to be practically negligible. Only in the upper Mississippi Valley has business of any volume been done at these rates. It is believed and hoped that the authorities in Washington will see fit to increase the authorized prices for coal soon. Only in this way, it is believed, can a serious fuel situation during the coming winter be avoided.

Lake Trade—The coal trade on the Great Lakes has been going on during the past week in much the same manner as the weeks preceding. The volume of this business is large and shipments heavy. It is thought by many that if the Lakes remain open for a reasonable length of time this fall the Northwest will not be seriously affected by a lack of fuel.

Middle Western—Strenuous efforts are being made by dealers and large consumers throughout the Middle Western territory to accumulate stocks against the time of need, with little success. Eastern coals are particularly scarce. This is especially true of the smokeless and splint varieties originating in West Virginia and Kentucky. The output of Illinois and Indiana mines is not sufficient to meet the demand for fuel. The labor supply is short, but the car supply during the past week or two has been approximately equal to the output of the mines. Strikes during the recent past have caused enormous losses of output, as well as of wages, throughout this territory. At the present time the industrial situation in this region is much improved, and the outlook for the future, so far as labor is concerned, is comparatively tranquil.

A Year Ago—Anthracite passing the between-season's business in excellent shape. Acute shortage of bituminous occasions alarm. Most severe car shortage of the season in the Lake district. Price situation confusing. Domestic trade opens up in the Middle West.

COAL PRODUCTION

Continued recovery from the depression of mid-August marked the course of the ratio of tonnage produced to full-time capacity during the week ended Sept. 1. Mines representing more than one-third of the output of the country reported a production amounting to 72 per cent. of their full-time capacity as limited by the labor force at present available. As compared with 68.5, the ratio for the preceding week, this was a substantial increase, but was below the record of 78 per cent. reached early in July. Improvement was most marked in Illinois, where the return of striking miners to work brought up the index for that state to 76 per cent., the highest point attained since July. Indiana and western Pennsylvania also recorded increases. The strike in eastern Kentucky and Tennessee continued, rstricting tonnage to approximately one-tenth of the full-time capacity.

Shipments of coal on 17 of the leading roads carrying soft coal showed a decrease of 8 per cent. in the week ended Sept. 8, compared with the week ended Sept. 1. This decrease was largely due to the more or less general observance of Monday, Sept. 3, Labor day, as a holiday. In Indiana, Ohio, and Pennsylvania, union states, little or no coal was loaded on Labor day, and these states show the largest decrease.

PERCENTAGE OF PRESENT FULL-TIME OUTPUT PRODUCED IN CERTAIN STATES BY ALL OPERATORS MAKING WEEKLY REPORTS

State	Week Ended: July 14	July 21	July 28	Aug. 4	Aug. 11	Aug. 18	Aug. 25	Sept. 1
Iowa	89.9	86.4	87.3	87.5	82.6	85.3	86.3	81.4
Illinois	79.5	77.1	76.0	72.6	70.3	54.8	69.3	76.0
Indiana	73.0	69.3	67.8	69.5	63.2	71.8	69.3	72.9
Ohio	69.3	69.2	69.4	73.7	70.2	73.2	68.6	68.6
Western Penn	78.6	77.9	76.3	78.1	78.2	69.4	75.2	76.9
Winding Gulf region, West Virginia	....	....	....	70.5	77.1	83.0	88.7	87.8
Southwestern Va	89.6	96.1	95.8	94.9	94.0	93.9	94.1	91.7
Eastern Kentucky and Tennessee	78.4	81.0	82.6	68.6	74.2	10.8	4.7	10.8
Alabama	....	....	91.4	88.4	88.8	85.9	86.1	83.6
Kansas and Missouri	78.0	78.2	69.5	69.4	64.9	72.2	76.2	79.4
Oklahoma and Arkansas	75.7	69.2	79.0	63.4	66.0	65.5	70.0	63.0
Total reporting from beginning	78.1	76.3	75.3	73.0	71.8	62.5	68.5	72.0

Because both 5 and 6-day weeks are included in these figures it is not possible to compare the average daily output in the week of the 8th with preceding weeks. It would appear, however, that the rate of production in the week under discussion was about that for the month of August.

Dun—Reviving activity does not appear in all quarters **where expected, but** signs of it are both more **numerous and** easier of discernment. Yet, if in **some lines there** is more animation with the advancing season, all business does not move **forward** with the momentum of a year ago and in certain of the more important **branches** there is still halting, either as a result of continued doubts about prices, or **because** buyers whose immediate wants are not pressing are waiting for the further reaction which seems to be foreshadowed.

Bradstreet—Trade grows, prospects **for fall** are very encouraging and **industrial** outputs are only limited by **lack of labor,** but repression is created in **some channels** by past or possible future price-fixing, by uncertainty **over taxation on excess profits,** by the hardening of rates **for money and** by the husbanding of resources to take care of the forthcoming government loan. But the wants of a very numerous well employed people, plus the enormous needs of a wealthy nation at war, has made for a forward movement, and while government buying looms largest, the more important markets have been visited by **numerous** merchants who have taken **staple articles** rather freely.

Marshall Field & Co.—Current **wholesale** shipments of dry goods are **running ahead** of the corresponding **period of 1916.** The volume of road sales for both immediate and future delivery is considerably larger than in the same period last year. Customers have been in the market in about equal numbers. Collections are ahead of the same week a year ago.

CARLOADS OF COAL ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

District	Week Ended: Aug. 11	Aug. 18	Aug. 25	Sept. 1	Sept. 8
Alabama, eastern Kentucky and eastern Tennessee	8,275	6,755	5,368	5,545*	5,603
Illinois, Indiana, and Western Kentucky	20,243	20,927	22,423	22,329*	19,612
Pennsylvania and Ohio	46,966	44,350	47,058	47,622	41,886
West Virginia and Virginia Smokeless	12,686	13,258	14,021	13,549*	11,856
West Virginia and Virginia: High volatile	19,621	18,897	18,799	18,055*	18,684
West of Mississippi	1,858	1,700	1,762	1,923	1,664
Total	109,649	105,887	109,431	109,023*	99,305

* Revised from last report by inclusion of late returns.

BUSINESS OPINIONS

The Iron Age—The fuel situation has become more serious since the fixing of the $2 basis for bituminous coal and present and future effects upon the steel industry are giving no small concern. Eastern producers of plates and shapes have been facing a shutdown for the past ten days because of short shipments of gas coal, and it appears that the Government must actually get into the business of supplying coal to some iron and steel producers from whom it has bought material.

The fact that $2 coal is not coming out and that users whose contracts at higher prices are still in force are getting a supply, indicates what will happen when a price is fixed on coke. Steel companies which buy blast furnace coke in the market may have to look to the Government to supply them with coke in order to be able to deliver Government steel.

Only recently blast furnaces were unwilling to enter into contracts for coke, expecting almost daily the announcement of the Government price. In the past week some furnaces which have sold pig iron through the first half of 1918 have contracted for coke at $8.50, some of these contracts running through all of 1918.

BOSTON

Bituminous market still in the air. Quotations on the $2 net ton basis still extremely rare. City of Boston has difficulty buying supply. Consumers as well as coal factors are waiting for action at Washington. Price revision expected. Some $3 net ton coal coming forward but in limited quantities. Pennsylvania grades at standstill on the new business offered. Anthracite water shipments unfavorably affected by commandeering of tugs.

Bituminous—For more than a month now the market has been in a state of suspension. Except for a few rehandling plants that do not come within the classification of jobbers there is a dearth of quotations. A few hardy individuals "discuss" prices on the basis of figures a month ago, but we hear of no actual sales. Scattering transactions on Hampton Roads coals on the authorized level are rumored from time to time, but certainly there has been no comprehensive tonnage placed since Aug. 21.

Meanwhile an increasing number of plants are trying to buy supplies for November and beyond. The City of Boston is a case in point. As an outgrowth of the mayor's complaint to the Fuel Administrator the latter asked detailed figures as to the tonnage needed, aggregating 52,311 tons of bituminous for the year ending May 1. Requisitions have been advertised five times, the first as long ago as Mar. 29, and not a bid has been received. Of course, the main difficulty earlier was the drastic specifications the city imposes. Prices in the interim for certain of the harbor institutions have ranged from $8.25@12.06 per gross ton alongside wharves for New River and from $8.25@10.25 for the Pennsylvania grades.

Just now there are practically no quotations to be had. One or two rehandlers have responded with temporary supplies ready in order to permit the municipal institutions to run, and the retailers have offered to coöperate so far as lies within their power on coal that has to be teamed. It will be interesting to see what adjustment of the local situation with regard to these particular public requirements will be made under the new fuel administration.

Some strong doctrine is emanating from Washington these days. While it is again recited that the Government cannot nullify contracts that were entered into in good faith prior to the President's price ruling, there again comes the intimation that by negotiation or by requisitioning output the price level is to be scaled down. Seldom has a great industry shown a condition so nearly verging on paralysis, and seldom have its leaders been so balked and helpless as at present.

Oct. 1 is the date all are looking forward to now, in the hope that the expected readjustment of prices will then be issued. Much will have to be worked out in the way of distribution, once the mines are in position to take spot business, and there is every chance that by Nov. 1 the New England situation will be serious beyond precedent.

The only bituminous prices quotable this week are on Pocahontas and New River, small lots at $3.92 or thereabouts f.o.b. Norfolk and Newport News, and $8.75@9 f.o.b. cars Providence or Boston for inland delivery.

Anthracite—Three tugs regularly moving from Philadelphia east have now been definitely commandeered by the Government and receipts of coal here are certain to be unfavorably affected. It seems to be clear that the coastwise trade will have to scrabble along on even less transportation than is now available, because the war needs of the Government are likely to be urgent throughout the next six or eight months.

All-rail deliveries are slowing up, especially those by "solid-train." The company which has shipped the largest number of solid train-loads in the aggregate has furnished only three since Sept. 1. Two other anthracite companies have shipped six and nine trains respectively, but the movement has so far been confined to three sources of supply.

A hearing was held in Boston on Sept. 18 by Commissioner Stevens of the Federal Shipping Board with regard to a proposal to put all barges and tugs in the Atlantic coastwise coal trade under central control, the idea being that better service could be thus given than under present methods. It developed at the hearing that practically all the transportation lines are opposed to the plan, for many practical reasons which they submit. There is a general feeling that boats are being moved now as fast as handling conditions and regulations as to labor and entering and leaving port will permit. A committee is to be appointed, representing the larger fleets together with the Shipping Board and the New England Coal Committee. It is possible that some modified plan of coöperation between towing interests can be worked out.

NEW YORK

The Washington announcement regarding retail prices causes a temporary lull in orders, but dealers complain of a lack of coal. Buyers go into the mining regions to make purchases. Middlemen hard pressed. There is no activity in bituminous with spot coals practically out of the situation. Plants may be forced to bank fires. Car supply bad.

Anthracite—The reports from Washington that retail prices for coal would soon be fixed by the Federal authorities and that small consumers should wait until the tentative price was fixed caused a temporary lull in demand early this week. At the same time the dealers are fearful that the situation this winter will be serious and that the demand for fuel will be far greater than the supply. The heavy call for domestic coals continues and shippers find themselves unable to reduce their outstanding orders very much. While the monthly tonnage figures show heavy production shippers say the coal is going to other sections of the country. With Government supervision there is the fear that this market may receive less coal than it now is getting because of the urgent need for fuel in other parts of the country.

Domestic coals are so short here that some houses have sent representatives into the mining regions in the hope of closing contracts whereby they will receive more coal. Middlemen except those closely allied with mining interests, and those having contracts, are finding it extremely hard to obtain coal sufficient to take care of their regular customers some of whom they have been serving for many years. Independent operators, as a rule, have most of their tonnage subject to contract and there is consequently comparatively little free coal to be had at this point.

Egg and stove are particularly hard to pick up. Chestnut is more plentiful and some wholesale dealers are insisting upon buyers taking some of it when buying either or both of the larger coals. As a result, some retailers are overburdened with chestnut while their bins are empty of egg or stove. Pea coal is scarce and bringing full prices.

The steam coals are easy and the cheaper grades low in price.

Current quotations, per gross ton, f.o.b. Tidewater, at the lower ports, are as follows:

	Circular	Individual
Broken	$5.95	$6.70
Egg	5.85	6.60
Stove	6.10	6.85
Chestnut	6.20	6.95
Pea	5.30	6.05
Buck	3.95@4.65	4.70@5.00
Rice	3.40@3.60	3.20@3.50
Barley	2.90@3.15	2.35@2.50
Boiler	3.15@3.30	.....

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—There is no activity in the market and spot coals are hard to find, operators devoting their production to taking care of contracts. Conditions are becoming more serious as the season advances. The consumer who neglected to make contracts last Spring and who now finds himself on the verge of a fuel famine so far as he himself is concerned, and almost compelled to close down his plant because of that fact, is having a hard time to obtain sufficient fuel to keep his plant running. And this condition does not only apply to the small plant owner, but to some large consumers who made a contract but curtailed their tonnage, expecting to make another agreement at a lower price.

In central Pennsylvania mining has been greatly curtailed because of poor car supply and labor conditions resultant from it. Miners are disgruntled when they cannot work every day. Operators say irregular working conditions are driving labor into other industries and with immigration smaller than for many years will cause an even greater shortage in labor.

Much of the coal which would ordinarily come here is being diverted into the West or Lake regions, owing to the priority orders which gives those sections first call on cars. Some producers say that those operators who are willing to give the railroads first call on their coal are able to secure enough cars to operate their mines much better than those whose output is heavily contracted.

Many large industrial plants are said to be running close to the bottom of their coal bins. Contract coal is not moving freely, owing to the poor car supply with the result that there is a heavy demand for free coals.

Purchases of $2 coal are seldom heard of and no sales on that basis have been heard of at Tidewater.

Some shippers expect that with exports to Canada checked there will be heavier shipments here. There has not been much improvment in bunkering and many vessels are being delayed owing to the lack of coal.

PHILADELPHIA

Anthracite trade turbulent. Increase in retail prices brings criticism. Big company shipments light. Heavy demand continues from New England and the West. Government gets coal for army cantonments. Steam sizes strengthen. Bituminous shippers discouraged. Car supply serious. Contracts get all the coal. No spot shipments.

Anthracite—Cool weather having persisted throughout the month of September thus far, the call on the retail trade for coal has been extremely heavy. Conditions have become turbulent, as the press and public have been most severe in their criticism because some dealers have advanced their prices to the highest point since the strike of 1902. The highest prices quoted, those of a large retail concern, are: Egg, $8.50; stove, $8.75; nut, $9, and pea, $8. This company claims that inasmuch as it buys almost 50 per cent. of its supply from the individual companies, most of whom are selling at the Government maximum prices of 75c. above company circular, it is necessary to adjust retail prices accordingly.

A few of the individual shippers continue to ask but moderate premiums as compared with the margin allowed them by the Government. One concern is still selling egg at $4.60, stove, $4.85, nut $4.95 and pea $4.15, while still another concern is quoting 30c. above company circular or $4.75 for egg, $5 for stove, $5.10 for nut and $4.30 for pea. It is rumored, however, that these prices are only made to the very best of their regular trade and that the full 75c. is being taken advantage of on shipments to other buyers.

The offices of the big companies present every appearance of a winter rush and the sales agents apparently dread the coming of real cold weather, for even this early they are besieged daily with disgruntled customers. No one in authority seems willing to predict when heavy shipments will come to this market, although there is never a week that some one does not pass along the word that the market is about to be "flooded" by the big companies.

The prices per gross ton, f.o.b. cars at mines for line shipments and f.o.b. Port Richmond for tide, are as follows:

	Line	Tide		Line	Tide
Broken	$4 55	$5 70	Buck	$2.90	3.30
Egg	4 45	5 75	Rice	2.40	3.40
Stove	4 70	6 00	Boiler	2.20	3.30
Nut	4 80	6 05	Barley	1.90	2.15
Pea	4 00	4 90			

Bituminous—There can be gainsaying the fact that local bituminous operators are discouraged over present conditions. They had hoped that by this time there would have been some readjustment of the tentative price schedule made by the Government, but today the price of $2 still prevails. Every operator in the trade has both wired and written to the Fuel Commissioner, explaining his own individual case in regard to the cost of production. Up to this time the only response received was the request to make out daily cost sheets, which are being sent in promptly.

Production continues to be far below demand, with the car supply remaining the greatest element to contend against. We know of one West Virginia operation with a normal production of 178,000 tons which fell 63,000 tons short on account of not receiving sufficient cars to load. And this is by no means an exceptional case, as many operations are unable to maintain an average as great as this. If it were not for railway fuel orders many operations would be unable to keep going.

As has been the case since the price fixing, practically all coal produced has been applied on contract business, and at this time it looks as if the contracts would be allowed to stand. Certainly it can be said for the consumer that he is entirely satisfied with this arrangement and with a price around $3 to $3.50 considers himself quite fortunate since he is able to command a fuel supply. There is very little coal to be had on the open market at the $2 rate, but we know of a few sales at that figure.

BALTIMORE

Coal trade high in the air over $2 coal. Shipments even on contract light and many industries running short. Feeling rather pessimistic, with hopes based on possible revision upward. Hard-coal men in uncertain state.

Bituminous—Two-dollar coal has sent the fuel trade aëroplaning higher than petrol ever lifted an airman. After many visits to Washington, in which cost sheets were produced to prove that many mines cannot produce at anywhere near that level, and with numerous small operations already closed or near the closing point, the best-posted coal men feel that the Government should be convinced that there must be revision upward to save the situation. That revision will come in some districts seems assured, but it will have to come quickly if serious results are to be averted.

There is no strictly $2 coal for sale here. Some may be sold at $2 mine basis and then the extra added on for haulage to local plants, in order to assure a fair profit, or sales may be made on "old contracts." Increase in all-rail coal as compared with the big drop in tidewater coal, where it must be delivered at the Government price, is probably accounted for by the above. Not that there is any too much line coal, for fuel

is far below even urgent contract requirements, and numerous plants are bombarding coal men for fuel deliveries and saying that they will have to close in part or in full shortly unless relief comes. This includes quite a number that are handling Government business.

At all the tidewater piers there is but little coal. A few hundred cars for Curtis Bay, Locust Point, Canton and Port Covington are noted where there should be several thousand. There is a shortage even of bunker coal, and several vessels have been held up for lengthy periods because of inability to complete coal requirements from supplies at the terminals. Deputy Tidewater Commissioner Malone spent some time the early part of this week in Washington in consultation with Mr. Garfield's office in relation to the situation. The entire situation is causing a pessimistic feeling in the trade.

Anthracite—Hard-coal men are in an uncertain state. President B. M. Watts, of the Retail Coal Exchange, spent much time in Washington early this week, where he presented figures of distribution, etc., to the Government officials, and said on his return that he felt that there would be no revision downward for hard coal here. Other coal men, however, were not so optimistic, especially in regard to the reported plan to have a citizens' committee in each district fix a profit margin for retail distribution. Many predicted that any effort to cut the present margin, considered by many too little already, would see many coal men forced out of business.

HAMPTON ROADS

Light dumping past week. Stocks somewhat lighter. Movement from mines good. No sales reported at fixed prices. Steamers delayed on account of difficulty in securing cargo and bunker licenses.

The tonnage dumped for this week is smaller than that for the preceding week by some 30,000 tons. This falling off is no doubt largely due to the absence of spot business. Stocks are fairly good and the movement from the mines is fair. While inquiries from consumers are frequent no sales are reported. Shippers seem to be determined to know just where they stand in regard to the Government prices before they sell any coal.

It is reported that the Fuel Director has decided that the export price to neutrals will be the same as the domestic price. This does not seem hardly possible and it would be interesting to know just what prompted any such ruling.

Dispatch in loading is now good at all of the piers. On the 18th inst. a large fleet of coal-laden barges, which had been weatherbound here for some ten days, proceeded to sea. A number of ships have been delayed in sailing on account of the difficulty in securing cargo and bunker licenses from the Bureau of Export Licenses. The delay is most irksome and the Government should take such steps as are necessary to insure prompt action on applications.

Dumpings for the week ending Sept. 15 were:

Norfolk & Western Railway.....	96,235 gross tons
Virginia Railway.....	87,626 gross tons
Chesapeake & Ohio Railway....	94,264 gross tons
Total.....	278,125 gross tons

COASTWISE FREIGHTS

Rates from Hampton Roads remain nominally at $2.50 for barges, 1500 tons and upward. There is only a scattering demand and charters are few and for the most part confined to factors who have coal due them on contract.

On Long Island Sound, New York loading, $1.35 is the rate to New Bedford, with Providence 10c. less.

Lake Markets

PITTSBURGH

Expectations that Government price will be advanced to $2.50 or $3. Market transactions inconsequential. Fair car supplies.

The view is now being commonly expressed in local coal circles that there will be a revision in the Government price on coal, to a basis of $2.50, $2.75 or possibly $3. Whether or not this opinion rests upon adequate information is a question, but there seems to be some ground for it. The Peabody committee, it is related, is accumulating a mass of evidence tending to show that such a revision should be made. It is possible that the continued stagnation in the open market is due to expectation that some such price revision will occur. It is true that there are open market sales at the $2 basis, but the tonnage involved is so small as to be practically inconsequential.

Statements vary as to the present volume of production in the Pittsburgh district. In some quarters it is held that production is fully as large as it was before the Government fixed the price, four weeks ago, while in other quarters, where it is insisted that it is necessary that the Government price be advanced, the claim is made that there has been a large decrease in output. The circumstantial evidence is that the mines are shipping much more coal in the Lake trade than earlier in the season, and that a great many manufacturing consumers, if not all, are receiving as much coal as they consume, not having had to draw upon stocks to any extent. Retail dealers, however, are probably not getting as much coal as they need.

There have been full car supplies for Lake shipments, and moderately good supplies for commercial shipments, supplies on the whole being probably as large as could be loaded with the present inefficient performance of labor. We quote the market, such as there is, at the Government prices, $1.75 for slack, $2 for minerun and $2.25 for screened coal, per net ton at mine, Pittsburgh district.

BUFFALO

Same bituminous deadlock. Trying to induce the Government to yield. Outsiders say the regulation price is enough. Heavy Lake shipments, especially to Duluth.

Bituminous—The situation remains as before. Operators say they have no coal to ship at the regulation prices and claim that the production is falling off. As to the jobbers, there is nothing to do but to tell all new customers that they can get nothing for them and spend their full time filling such contracts as they have. Some jobbers have a liberal amount of them. Such as have not are practically out of business.

Reports from the bituminous shipping centers on Lake Erie are more hopeful. It is now declared that there will be coal enough shipped to the Upper Lakes to supply the winter needs, but this is at the expense of the iron-ore movement. A vessel ordered to carry up coal loses about half a trip in the ore trade.

The car shortage and labor scarcity continue, but they are now so entirely overshadowed by the price situation that little is said about them. Consumers as well as members of the trade are clamoring for an advance of the price. Jobbers report that they have received offers as high as $6 net at the mines for coal, but find no way of accepting. Meanwhile a third element appears in the shape of outsiders who declare that the position taken by the trade is a bluff, and that coal can be mined at a profit at the regulation price.

It is still impossible to make any quotations except in a nominal way, as the trade agrees that no coal is selling at the regulation price. This price is as follows:

	Lump	Mine-Run	Slack
Pittsburgh (rail rate).....	$3.90	$3.65	$3.40
Bessemer (rail rate).....	3.85	3.60	3.35
Allegheny Valley (rail rate)	3.75	3.50	3.25

These quotations are per net ton, f.o.b. Buffalo, with jobber's margin of 25c. added to the regulation mine price.

Anthracite—The city supply is small again and consumers are complaining that they are discriminated against. If they refer to the Lake trade as a competitor they are correct, for the shippers are turning large amounts to the Lakes, with the apparent idea that Buffalo can be taken care of when the Lakes are closed. The shortage in the city is more apparent than otherwise and does not need to be taken seriously.

Lake shipments are increasing and are mainly confined to the head of Lake Superior, whence the supplies for the Northwest must be drawn. Of the 21 cargoes reported for the week to domestic ports 12, and much the larger ones, cleared for Duluth and Superior. These aggregated 87,300 net tons, with 26,600 tons for Chicago, 12,500 tons for Milwaukee, 7000 tons for Sheboygan, 2000 tons for Calcite and 800 tons for St. Ignace.

Freight rates remain strong at 75c. for Sheboygan, 60c. for Chicago, 50c. for Milwaukee and 45c. to Duluth, others being at private rates.

TORONTO

Little coal coming forward pending adjustment of prices. Stocks on hand light. Fuel controller warns dealers not to raise prices unduly.

Pending the adjustment of prices at the mines, little coal is coming forward and stocks on hand are light. Dealers are busy overtaking outstanding orders. Such of the larger consumers of bituminous as have not already stocked up are holding back orders until prices have been re-adjusted.

It is estimated that about 50 per cent. of the anthracite required for domestic purposes during the winter has now been laid in by consumers. C. A. Magrath, Canadian fuel controller, has notified coal dealers that they must not increase prices without first making representations to him as to the grounds on which they ask an advance.

Quotations for best grades per short ton are as follows: Retail anthracite egg, stove, nut and grade, $9.50, pea, $8.50; bituminous steam, $9; slack, $8 to $8.50; domestic lump, $10; cannel, $11. Wholesale f.o.b. cars at destination, three-quarter lump, $7 to $7.50; slack, $6.85 to $7.

CLEVELAND

Modification of the priority shipment order is increasing shipments to municipal and industrial plants. Car supply improved and shipments of Lake coal are heavy.

Modification of the priority shipment order allowing operators to divert shipments of slack coal from Lake to municipal and industrial plants has helped out the Cleveland market to a considerable extent and if continued indefinitely will relieve the intense situation here since nearly 75 per cent. of the steam coal used in Cleveland is slack. Reports from operators in the Pittsburgh No. 8 district show that practically all of their slack is now being shipped to municipal and industrial plants.

The car supply the past week was much better and heavy shipments of bituminous coal were made to Lake for reshipment to the Northwestern docks. Approximately 1,136,000 tons were shipped for the week ending Sept. 15.

City of Cleveland Light Commissioner Davis reports that he has purchased 15,000 tons of West Virginia slack for the municipal lighting plant, to be delivered before Jan. 1, at $4.40 per net ton, f.o.b. cars Cleveland.

TOLEDO

Only steam users with contracts are getting anything like a normal supply of coal. Dealers are all complaining of short stocks, and inability to secure shipments.

The market has not recovered from the chaotic conditions caused by the Government price list. No coal is moving through this city except what had been contracted for in the early part of the summer. Small towns in this section are starting to make complaints to state officials, because of their inability to secure adequate supplies.

Steam users have for the most part reached a stage where it is imperative that they get a supply of coal so that operations of the factories will not have to be curtailed. A small percentage of factories located here have contracts which are still in effect, and they alone appear to be well supplied with coal. No free coal has appeared on this market for the past month, and as long as coal can be transported to the Upper Lakes by vessel, coal men assert, there will be little to offer.

Lake shipments are maintaining good volume and as the car supply continues to improve, the work of handling the coal from the mines to the Upper Lakes through this port is going rapidly forward. More vessels are reported as being engaged in coal carrying this month than in any two months of the summer.

Prices, f.o.b. mines, are as follows:

	Mine-Run	Lump and Egg	Nut and Slack
Hocking and Pomeroy.	$2.00@2.35	$2.25@2.60	$1.75@2.10
Kentucky..	1.95@2.40	2.20@2.65	1.70@2.15
Pocohontas.	2.00	2.25	1.75
West Virginia splint....	2.00	2.25	1.75

DETROIT

Free coal of steam or domestic type is almost wholly missing from the market. Little anthracite is arriving. Lake shipments maintain volume.

Bituminous—Though quotations on steam or domestic sizes of bituminous coal are offered, based on the Government prices at the mines, wholesalers and jobbers say they are unable to find coal to fill orders. The Detroit market is said to be almost wholly without free coal. The stock arriving is practically all on account of contracts closed prior to the date when the Federal prices became effective. Some of the jobbers say the situation is such that finding they are unable to provide coal for spot delivery, they are giving their attention wholly to looking after the supplying of customers having contracts.

Anthracite—The shipments of anthracite arriving in Detroit are described as falling

short of normal requirements. Efforts of retail dealers to increase stocks on hand are meeting with discouraging results. Among some the opinion is expressed that a larger number than usual of the household buyers already have made provision for winter needs and have their bins supplied. There are indications, however, that many of the consumers are withholding orders awaiting the action of the Government in fixing retail prices, action, which, according to news dispatches, is to be taken immediately.

Lake Trade—It is the expectation of coal shippers that before the close of navigation, sufficient coal will have been moved up the Lakes to assure an adequate supply for the Northwest. Shipments are being maintained in good volume and the supply of vessel tonnage offered is more than sufficient to take care of all cargoes arriving at shipping docks.

COLUMBUS

The coal trade is still in an unsettled condition. Most of the output of Ohio mines is moving to the Northwest and frantic efforts are being made to divert a portion for local uses.

The coal trade in Ohio has been in an unsettled condition during the past week. With various authorities pulling in opposite directions, the producer and consumer do not know which way to turn. Every one connected with the industry is waiting for action to be taken at Washington to relieve the present stress and recently assurances have been given that such action will be taken in the near future. In the meantime domestic users as well as steam consumers are hard put to it for fuel. Prospects are for a strenuous period shortly after the Lake season closes.

Retail prices are still rather high and show little decline from the figures of several weeks ago. Pocahontas is in strong demand and stocks are scarce. There is also a good demand for West Virginia splints. Hocking lump is selling at retail between $5 and $5.50. Anthracite is scarce in central Ohio.

Steam business is active and many plants are running with but little surplus fuel. In some cases plants have been idle and appeals have been made to state authorities. This is especially true of power and public utility plants. Large users have succeeded in securing some surplus stocks and are in fairly good shape as a rule.

Prices on short tons f.o.b. mines are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump	$2.25	$2.60	.....
Inch and a quarter	2.25	2.60	$2.25
Three-quarter inch	2.25	2.60	2.25
Nut	2.25	2.60	2.25
Egg	2.25	2.60	.....
Mine run	2.00	2.25	2.00
Nut, pea and slack	1.75	2.00	1.75
Coarse slack	1.75	2.00	1.75

CINCINNATI

Confusion over prices continues, with evidence of uneasiness on the part of consumers. Holding off is the rule, however, in anticipation of lower prices.

The confusion growing out of the inability of operators to fill old contracts and at the same time to supply a heavy demand for coal at the new Government prices continues to be the principal feature of the market. Domestic consumers are especially insistent on reductions in their favor, but retailers are unable to secure coal at the new prices, and operators take the position that they are not called upon to sacrifice customers who contracted for coal some time ago.

The comparative lateness of the season, and the fact that little coal has been stored by domestic consumers, have been the source of considerable uneasiness among public authorities, who fear that winter will find the people almost without coal, on account of the general refusal to buy at current prices, in the hope of getting much cheaper coal. The Ohio authorities have taken up with Washington the matter of securing some definite rule on retail prices, in order to cut the deadlock which at present exists. Aside from this dominating feature, the market could be called strong.

LOUISVILLE

Uncertainties still keep the trade behind. Southeastern Kentucky-Tennessee operators book business on Jellico basis conditionally.

Uncertainties as to what will be the outcome of the price-fixing negotiations, together with the strike in the southeastern Kentucky-Tennessee field, keep the coal trade of this section disorganized. Numbers of large consumers are taking steps to obtain control of mine outputs so that they will be free of market and Governmental interference.

There is said to be a certainty that the strike difficulty in the Kentucky-Tennessee field will yield whenever the operators can be assured of being able to go ahead on a basis that will prove reasonably remunerative. It is given out in Louisville that there have been virtual assurances that those operations working the No. 6 and No. 7 seams, the Elkhorn seam and the thin seam No. 4 in the Beattyville district will be permitted to operate on the Jellico basis, which is $2.40 for mine-run.

BIRMINGHAM

Demand strong and insistent, but no coal to meet it. Normal market conditions await the adjustment or suspension of Government schedules. Labor conditions much improved and production of past week showed material gains.

The need for steam coal in the territory supplied from this field is now growing acute, municipal requirements for heating of school buildings, maintenance of operations at small lighting plants and other public utilities in many instances being in sore straits for fuel. The city of Birmingham has been unable to secure coal for the heating of the public school buildings, an appeal to the coal operators' association eliciting the information that no relief could be offered at this time. In fact only consumers who have previously contracted for their coal supply are receiving consideration and due to the disturbed labor conditions which have prevailed for several weeks, the mines are far behind with contract deliveries and are thus compelled to apply their full output against contracts. In the meantime sales agents are being swamped with urgent appeals for coal, which they can only courteously decline.

Miners are gradually returning to work throughout the district and production will shortly reach normal proportions. A decision from the Government as to the adjustment or temporary suspension of the price schedules is expected shortly. This will remove the present stumbling block to trade activity and prove an incentive to record production and movement of coal.

Coke

CONNELLSVILLE

Furnaces shy on making contracts, only two being closed. Coke price fixing may await revision of coal price. Production and shipments increased.

Efforts of coke operators to put through contracts for 1918 deliveries have been far from successful, only two contracts having been made, and those at the flat prices of $8.50. The idea of operators in bringing up the subject of contracts at this time was to take advantage of the fears of furnacemen that in the event of the Government fixing the price of coke they would not be able to obtain sufficient supplies at the fixed price, while a contract at a higher price would assure them full shipments. This, it is asserted, has been the experience in the case of a Government price on coal. The furnacemen, however, have not been greatly moved by this argument and have not been nearly as ready to enter into contracts as had been expected. In order to cover the contingency of the price of pig iron coming down, either through Government action or by the natural course of the market, operators have proposed sliding scale contracts for coke, based upon pig iron prices from month to month, but the ratios, running as low as 5 tons or 4½ tons of coke per ton of pig iron, have not been considered attractive. All that can be reported thus far is that two contracts, each for 10,000 to 15,000 tons of coke per month for the year 1918, have been closed at a flat price of $8.50.

It is still expected that the Government will fix the price of coke, but it is expected that there will be an upward revision in the coal price set Aug. 21, and that the coke price will be fixed thereafter, in relation to the new coal price, predictions now being for a coke price as high as $5 to $7.

The spot market is a shade easier, being quotable at $12.50@13 for spot furnace and at $13@13.50 for spot foundry, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Sept. 8 at 355,987 tons, an increase of 19,817 tons, and shipments at 370,312 tons, an increase of 33,313 tons.

Birmingham—Inquiries for coke continue strong, with little or no business being accepted by producers, who are having difficulty in taking care of their contracts. Production has improved slightly with the increased coal output of the past week, but additional facilities will have to be provided before this district can take care of the large tonnage sought. Spot foundry maintains the quotations which have existed for some weeks of $14.50 to $16.50 per net ton at ovens.

Buffalo—Coke prices are not very steady, but the representatives of Connellsville ovens do not report any material change in figures. They seem to be as uncertain as to the future of prices, agreeing that $3 coal does not make logical $15 coke. Quotations are on the basis of $15 for 72-hr. Connellsville foundry, $13.50 for 48-hr. furnace and $12 for low-grades and stock.

Middle Western

GENERAL REVIEW

Retailers and industrial concerns in mid-West territory are making strenuous efforts to stock coal with little success. Labor shortage and mine strikes in Illinois hindering shipments. Car supply sufficient for present production on account of many idle mines.

Because of the demand on the part of householders, retail coal dealers throughout this territory are making strenuous efforts to secure an adequate supply of coal, but are meeting with little success in securing sufficient supplies at a time when the demand upon the shippers is heavier than has existed at any time in the history of the business. Industrial concerns are also in the market, and some of the larger manufacturers are making desperate efforts to put in a large stock for future emergencies.

The car supply in the Indiana-Illinois field as a whole has shown an improvement, the latter field reporting little time lost on account of failure on the part of the railroads to furnish empties. This, however, is due more or less to the fact that the mines in the Springfield district have been idle during the entire week, the day laborers having gone on a strike in sympathy with the striking street-railway employees at Springfield, and later demanding increases in wages ranging from 75c. to $1 per day. More than 6000 men have been idle and the suspension of operations in this district has seriously interfered with shipments. Notwithstanding that officials of the U. M. W. A. have insisted that the men return to work, few of the operators in this district anticipate that tonnage production will be anywhere near the average, because of the unsettled conditions and the fact that the workmen seem in no mood to follow instructions of their union officials.

In the East coal shipments for Western markets are being held up on account of railroad congestion, and the few shipments arriving are barely sufficient to take care of contract obligations. Anthracite all-rail shipments have been light. However, there was a fairly good supply via Lake, which is hardly sufficient to take care of local retailers' demands.

CHICAGO

Chicago dealers unable to secure sufficient shipments to meet demands, especially for Eastern and Kentucky coals. Strike in central Illinois mines causing enormous tonnage loss. Question of supply very serious.

Chicago retailers, who until recently were of the opinion that more or less Eastern coal would be available by this time, now find that due to car congestion, also general labor difficulties, including petty strikes and inefficiency of the workmen, very little, if any, of the contract obligations will be taken care of, not to mention the almost impossibility of securing spot coal from time to time. While Indiana and Illinois coals have been coming into the Chicago market quite freely, the supply has not been adequate for all demands and the recent strike in the Springfield district has not helped the situation.

Reports vary in regard to anthracite—some companies claiming to have moved more than the usual amount and others making statements to the contrary. It remains a fact, however, that householders who ordered coal during April and May, have not as yet succeeded in having their bins filled. Shipments all-rail have been light, but Lake arrivals have been fair and not less than 25,000 tons are expected to arrive at the docks this week.

Indiana mines continue to be far behind on orders, and shippers are not accepting any new business that calls for shipment within four to six weeks. Car supply has improved while labor supply has been about

on a par with that in southern Illinois. The State of Indiana has placed its order for coal for the various state institutions at the Government prices, and W. C. Ball, of Terre Haute, has been appointed to act on behalf of the state in seeing that the coal is distributed among the institutions as it is needed. The Mayor of Evansville has opened a municipal coal yard and lump is being furnished direct to householders at $3.63 per ton, delivered.

Central Illinois operators are hopeful that the strike is settled for the time being, at least. Shippers are refusing to accept any new business because of their contract obligations, and it is doubtful if any great amount of coal from this district will be available for shipment outside of contract.

There has been but a small amount of Eastern coals received in Chicago lately. West Virginia and Ohio are unable to supply the nearer markets and railroad restrictions seriously interfere with all westbound shipments. Chicago dealers are unable to secure these or eastern Kentucky coals in sufficient quantities and as a result are making an effort to substitute any other grade they can secure.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

	Williamson and Franklin	Saline and Harrisburg	Fulton and Peoria	Springfield	Carterville	Grundy, La-Salle, Bureau and Will
Steam lump	$2.20@2.35	$2.20@2.35	$2.20@2.35	$2.20@2.35	$2.20@2.35	$2.65@2.80
Domestic lump	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Egg or furnace	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Sm'l egg or nut	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Stove	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	.....
Chestnut	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	.....
Pea	2.20@2.35	2.20@2.35	.....	2.20@2.35	2.20@2.35	.....
Washed egg	2.20@2.35	.....	.....	2.20@2.35	2.20@2.35	2.65@2.80
Washed stove	2.20@2.35	.....	.....	2.20@2.35	2.20@2.35	2.65@2.80
Washed nut	2.20@2.35	.....	.....	2.20@2.35	2.20@2.35	2.65@2.80
Mine-run	1.95@2.10	1.95@2.10	1.95@2.10	1.95@2.10	1.95@2.10	2.40@2.55
Screenings	1.70@1.85	1.70@1.85	1.70@1.85	1.70@1.85	1.70@1.85	2.10@2.25
Washed slack	1.70@1.85	1.70@1.85	.....	.....	1.70@1.85	2.10@2.25

	Clinton and Sullivan	Knox and Greene	Eastern Kentucky	Smokeless: Pocah. and W. Va.	Smokeless: Penna.	Hocking	West Va. Splint
Dom. lump	$2.20@2.35	$2.20@2.35	$2.65@2.80	$2.25@2.40	$2.25@2.40	$2.60@2.75	$2.40@2.55
Steam lump	2.20@2.35	2.20@2.35	2.65@2.80	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Egg	2.20@2.35	2.20@2.35	2.65@2.80	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Sm'l. egg or nut	2.20@2.35	2.20@2.35	2.65@2.80	.....	.....	2.65@2.75	.....
Mine-run	1.95@2.10	1.95@2.10	2.40@2.55	2.10@2.25	2.00@2.15	2.35@2.50	2.15@2.30
Screenings	1.70@1.85	1.70@1.85	2.10@2.25	1.90@2.05	1.75@1.90	2.10@2.25	1.90@2.05

MILWAUKEE

Receipts continue unsatisfactorily slow. Prices held steadily, with the exception of a shading of 25c. in Hocking.

The coal situation, as far as Milwaukee is concerned, is no more reassuring than it has been for weeks. Supplies are coming forward slowly and unless something is done to speed up receipts the shortage in bituminous, as against last season, will amount to a half million tons or more. There is no anthracite on hand, notwithstanding arrivals thus far about equal those of last year. The demand is such that cargoes have been absorbed as fast as received. Prices continue as promulgated on Sept. 1, with the exception of Hocking, which is 25c. lower.

Mr. A. T. Van Scoy, of the State Council of Defense, who has just returned from an official survey of the coal situation at leading lake shipping and receiving ports, is convinced that there will be no material reduction in the price of anthracite, unless the freight rate of $2 per gross ton from the mines to Lake Erie ports is cut. All other charges connected with the transportation and handling of coal are reasonable, in his judgment.

The bituminous situation is much different and more complicated. Jobbers and dealers, in many cases, have an accumulation of high-priced coal and are facing the problem of getting rid of it without financial loss. On the other hand, consumers are chafing because they are not getting the benefit of the mine price fixed by the President's order.

A case of coal contract repudiation has developed at the state capital. Gov. Philipp has furnished the attorney-general with data showing that a Chicago firm has refused to deliver 3600 tons of coal to a state institution because the contract called for a reduction in accord with any price the President might fix. When the price was lowered the coal was called for, but the Chicago company cancelled the order. The matter has been referred to Commissioner Garfield at Washington.

ST. LOUIS

Situation critical in St. Louis for high-grade coal. Mines sold up and very little in sight for the domestic call that is coming. Standard easier, but Mt. Olive off of the market. Car supply better. No Eastern coals. An uncertain market, with much confusion.

There is practically no Williamson or Franklin coal available. The mines this week have been sold up for a matter of two months in most cases. No relief is in sight either on steam or domestic grades. The supply for the Southwest is extremely limited, as the great bulk of this tonnage has been placed in the Northwest, and there is going to be such a shortage of Williamson and Franklin County as has never before existed in the southwestern territory.

If coal could be sold at a premium, then Williamson and Franklin County lump and egg would be bringing $3 to $3.50.

The steam sizes are extremely scarce, and screenings are off of the market entirely. The operators will not make mine run, claiming they can get more out of the screened sizes, especially when they make No. 2, 3 and 4 nut.

There has been little anthracite this past week and no smokeless. The supply of Arkansas coal is cut off entirely.

Domestic demand had started to be good until the Government come out with some new stipulations as to retail coal, and the press began to advise the public to withhold buying. The circular prices prevail on mine shipments, but there is much confusion in St. Louis and adjacent territory as to retail prices, no two dealers figuring alike. The result being that the cheaper man has more orders than he can take care of, and the higher man has more coal in his bin than he can sell at his price.

The prevailing price f.o.b. mine is, per net ton:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump	$2.20@2.35	$2.20@2.35	$2.20@2.35
3x6-in. egg	2.20@2.35	2.20@2.35	2.20@2.35
2x3-in. nut	2.20@2.35	2.20@2.35	2.20@2.35
No. 2 nut	2.20@2.35	.....	.....
No. 3 nut	2.20@2.35	.....	.....
No. 4 nut	2.20@2.35	.....	.....
No. 5 nut	1.70@1.85	.....	.....
2-in. scrgs	1.70@1.85	1.70@1.85	1.70@1.85
2-in. lump	.....	.....	2.20@2.35
3-in. lump	.....	2.20@2.35	.....
Steam egg	2.20@2.35	2.20@2.35	2.20@2.35
Mine run	1.95@2.10	1.95@2.10	1.95@2.10
Washed:			
No. 1	2.20@2.35	$2.20@2.35	.....
No. 2	2.20@2.35	2.20@2.35	.....
No. 3	2.20@2.35	2.20@2.35	.....
No. 4	2.20@2.35	2.20@2.35	.....
No. 5	1.70@1.85	1.70@1.85	.....

Williamson and Franklin Co. rate is 87½c. Other fields, 72½c.

KANSAS CITY

Coal moving in good volume at fair prices. Consumers have not as yet stocked up very heavily. Coal at Government prices being handled subject to adjustment.

Coal, except Arkansas, is moving into Kansas City in a satisfactory volume to supply demand. Most dealers are getting the market price, which has prevailed during the summer, for their coal, though some are selling at 50c. per ton discount to move.

Well-to-do people are buying all the coal they want and paying the prices asked; they are taking no chances on a possible shortage, and are not gambling on the price they may be charged later. Flat owners and owners of buildings with storage facilities, are not stocked up heavily yet.

Dealers are getting coal billed at the prices indicated by the Government announcement, but with the notation in rubber stamp prices are subject to later change. It is anticipated that there will be a readjustment in the prices the dealers have to pay.

HELENA

Operators dissatisfied with Government prices and state cost of production is greater than figure set for sale. Mine run will be sold as prices set will eliminate all screened grades.

If the situation in this state was serious earlier in the year it is 50 per cent. more so now that the Government has set a price at which coal shall be sold at the mines at from $2.70 to $2.95 a ton. Operators contend that this price is far below actual cost in many respects and that it will cause many mines to close or to only sell mine-run, eliminating the screened grades. Coal men contend that the Government took snap judgment, comparing the local field with the East.

Recent contract prices in the state are as follows: Slack, $5.50; grate coal, $8.75, f.o.b. mines. Nut run, $2; egg nut, $3.25, and nut coal, $2.50, f.o.b. mines.

PORTLAND

Coal supply not equal to demand. State to buy stump acreage and burn wood. Prices higher than in many years and shortage approaching famine is predicted.

A shortage of coal closely approaching a famine is predicted by dealers throughout Oregon for the coming winter. They point out that the demand for coal has been so great by new and enlarged industrial plants that all available supplies have been taken up and consumers who failed to place orders earlier in the year are likely to go without coal the balance of the year.

State institutions have been unable to obtain bids on annual coal supplies and as a result the state has arranged for stump acreage from which for the next two years it will obtain wood for fuel. Over 250 acres of stumpage has been procured and spur tracks will be run to it. About 25,000 cords of wood will be secured at a cost of $3 a cord. It will be cut by convict labor.

The Portland school board has just placed orders for the last of its annual coal supply, 2835 tons of Hyde unwashed coal, 1000 tons of Wingate coal and 500 tons of Gales Creek coal at prices ranging from $7 to $7.95 a ton. Lignite coal is quoted at $3.75 and $4 per ton at the mines.

One of the anomalies of price fixing as applied to the bituminous coal trade is the discovery of one railroad serving the state that the price named for the grade of coal which the road is using is more than 40 per cent. above what it is paying for it under an existing contract; while a coal operator finds that more than half the product of his mine is being sold at one-third less than the President says he shall receive.

SEATTLE

Retail coal prices go higher because of shortage. Problem one of production rather than price. Price to consumer to remain high until Government sets retail figures.

The real problem in the Northwest is one of increased production rather than price now, although prices at this time are higher than in many years. In recent years the coal mines have made little money. This has curtailed production. The sudden withdrawal of all fuel oil from the markets has thrown a new and heavy burden upon the mines of the state. The mines of Washington by January, 1919, must increase their production 95 per cent. in order to supply actual needs. But this cannot be done under the prices set by the Government.

The City of Spokane, which entered the market last July, has just closed its last orders for 655 tons of lump coal and 250 tons of slack or steam coal. The lump was purchased on a basis of $8.50 a ton and steam at $6 per ton and are from $1 to $2 higher than was paid last year.

A call for bids at Arlington brought the following figures: Newcastle nut, $6.50; Diamond nut, $8.55; briquettes, $7.90; South Prairie steam, $7.25; Grand Ridge nut, $5.50; Renton nut, $6; Wellington steam, $6.60, and Wellington furnace, $6.45.

VANCOUVER, B. C.

Coal dealers reproved for raising prices. Retail price advances as a result of advance in labor costs.

Coal dealers and colliery companies in Vancouver have received a sharp reminder that coal prices may not be raised arbitrarily. Nicol Thompson, provincial representative of C. A. MacGrath, Dominion fuel controller, received and made public a telegram from him in which he said: "Understand coal prices have with some of your dealers gone up 50c. a ton. This matter should have been taken up with me and I emphatically object to the increase in price." He promises an immediate investigation. The price is now between $8.50 and $9 per ton.

The retail price of coal at Fernie has been advanced from $4.50 to $5 a ton for run-of-mine and from $4.75 to $5.25 a ton for screened; the operators and dealers point to recent increases in wages paid miners as the cause.